

checked by 17 2/24/17

CETIFICATION

SDG No:

JC36373

373 La

Laboratory:

Accutest, New Jersey

Site:

BMSMC, Humacao, PR

Matrix:

Soil

SUMMARY:

Soil samples (Table 1) were collected on the BMSMC facility. The BMSMC facility is located in Humacao, PR. Samples were taken January 25, 2017 and were analyzed in Accutest Laboratory of Dayton, New Jersey that reported the data under SDG No.: JC36373. Results were validated using the latest validation guidelines (July, 2015) of the EPA Hazardous Waste Support Section. The analyses performed are shown in Table 1. Individual data review worksheets are enclosed for each target analyte group. The data sample organic data samples summary form shows for analytes results that were qualified.

In summary the results are valid and can be used for decision taking purposes.

Table 1. Samples analyzed and analysis performed

SAMPLE ID	SAMPLE DESCRIPTION	MATRIX	ANALYSIS PERFORMED
JC36373-1	FTSSS-1	Soil	SVOCs; PAHs (SIM); LMWA; Pesticides
JC36373-2	FTFSS-2	Soil	SVOCs; PAHs (SIM); LMWA; Pesticides
JC36373-3	FTFSS-3	Soil	SVOCs; PAHs (SIM); LMWA; Pesticides
JC36373-4	BRSS-1	Soil	SVOCs; PAHs (SIM); Metals
JC36373-5	BRSS-1 DUP	Soil	SVOCs; PAHs (SIM); Metals
JC36373-6	BRSS-2	Soil	SVOCs; PAHs (SIM); Metals
JC36373-7	B5SS-1	Soil	SVOCs; PAHs (SIM); LMWA; Pesticides
JC36373-8	B5SS-2	Soil	SVOCs; PAHs (SIM); LMWA; Pesticides
JC36373-9	EB-012517	AQ -	SVOCs; PAHs (SIM); LMWA;
		Equipment Blank	Pesticides; Metals
JC36373-10	FB-012517	AQ – Field Blank Soil	SVOCs; PAHs (SIM); LMWA; Pesticides; Metals

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Mendez 1C # 188

Reviewer Name:

Rafael Infante

Chemist License 1888

Signature:

Date:

February 20, 2017

Report of Analysis

Page 1 of 3

Client Sample ID: FTFSS-1 Lab Sample ID: Matrix:

JC36373-1 SO - Soil

SW846 8270D SW846 3546

Date Sampled: 01/25/17

Q

Date Received: 01/27/17

Method: Project:

BMSMC, PR

Percent Solids: 92.4

	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
Run #1	6P34787.D	1	02/08/17	AC	01/30/17	OP173	E6P1601
Run #2							

Initial Weight 30.7 g

Final Volume 1.0 ml

Run #1 Run #2

ABN Special List

CAS No. Compound		Result	RL	MDL	Units
95-57-8	2-Chlorophenol	ND	71	17	ug/kg
59-50-7	4-Chloro-3-methyl phenol	ND	180	22	ug/kg
120-83-2	2,4-Dichlorophenol	ND	180	30	ug/kg
105-67-9	2,4-Dimethylphenol	ND	180	63	ug/kg
51-28-5	2,4-Dinitrophenol	ND	180	130	ug/kg
534-52-1	4,6-Dinitro-o-cresol	ND	180	38	ug/kg
95-48-7	2-Methylphenol	ND	71	23	ug/kg
	3&4-Methylphenol	ND	71	29	ug/kg
88-75-5	2-Nitrophenol	ND	180	23	ug/kg
100-02-7	4-Nitrophenol	ND	350	94	ug/kg
87-86-5	Pentachlorophenol	ND	140	33	ug/kg
108-95-2	Phenol	ND	71	18	ug/kg
58-90-2	2,3,4,6-Tetrachlorophenol	ND	180	23	ug/kg
95-95-4	2,4,5-Trichlorophenol	ND	180	26	ug/kg
88-06-2	2,4,6-Trichlorophenol	ND	180	21	ug/kg
83-32-9	Acenaphthene	ND	35	12	ug/kg
208-96-8	Acenaphthylene	ND	35	18	ug/kg
98-86-2	Acetophenone	ND	180	7.6	ug/kg
120-12-7	Anthracene	ND	35	22	ug/kg
1912-24-9	Atrazine	ND	71	15	ug/kg
56-55-3	Benzo(a)anthracene	ND	35	10	ug/kg
205-99-2	Benzo(b)fluoranthene	ND	35	16	ug/kg
191-24-2	Benzo(g,h,i)perylene	ND	35	18	ug/kg
207-08-9	Benzo(k)fluoranthene	ND	35	16	ug/kg
101-55-3	4-Bromophenyl phenyl ether	ND	71	14	ug/kg
85-68-7	Butyl benzyl phthalate	ND	71	8.6	ug/kg
92-52-4	1, l'-Biphenyl	ND	71	4.8	ug/kg
100-52-7	Benzaldehyde	ND	180	8.7	ug/kg
91-58-7	2-Chloronaphthalene	ND	71	8.4	ug/kg
106-47-8	4-Chloroaniline	ND	180	13	ug/kg
86-74-8	Carbazole	ND	71	5.1	ug/kg



ND = Not detected

105-60-2

MDL = Method Detection Limit

ND

71

14

RL = Reporting Limit

E = Indicates value exceeds calibration range

Caprolactam

J = Indicates an estimated value

ug/kg

B = Indicates analyte found in associated method blank



Client Sample ID: FTFSS-1 Lab Sample ID: Matrix:

JC36373-1 SO - Soil

BMSMC, PR

SW846 8270D SW846 3546

Date Sampled: 01/25/17 Date Received: 01/27/17

Percent Solids: 92.4

ABN Special List

Method:

Project:

CAS No.	Compound	Result	RL	MDL	Units	Q
218-01-9	Chrysene	ND	35	11	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	71	7.5	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	71	15	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	71	13	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	71	11	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	35	11	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	35	18	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	71	29	ug/kg	
123-91-1	1,4-Dioxane	ND	35	23	ug/kg	
132-64-9	Dibenzofuran	ND	71	14	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	71	5.7	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	71	8.8	ug/kg	
84-66-2	Diethyl phthalate	ND	71	7.5	ug/kg	
131-11-3	Dimethyl phthalate	ND	71	6.3	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	71	8.2	ug/kg	
206-44-0	Fluoranthene	ND	35	16	ug/kg	
86-73-7	Fluorene	ND	35	16	ug/kg	
118-74-1	Hexachlorobenzene	ND	71	8.9	ug/kg	
87-68-3	Hexachlorobutadiene	ND	35	14	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	350	14	ug/kg	
67-72-1	Hexachloroethane	ND	180	17	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	35	17	ug/kg	
78-59-1	Isophorone	ND	71	7.5	ug/kg	
90-12-0	I-Methylnaphthalene	ND	71	6.9	ug/kg	
91-57-6	2-Methylnaphthalene	ND	71	8.0	ug/kg	
88-74-4	2-Nitroaniline	ND	180	8.3	ug/kg	
99-09-2	3-Nitroaniline	ND	180	8.8	ug/kg	
100-01-6	4-Nitroaniline	ND	180	9.1	ug/kg	
91-20-3	Naphthalene	ND	35	9.9	ug/kg	
98-95-3	Nitrobenzene	ND	71	14	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	71	10	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	180	13	ug/kg	
85-01-8	Phenanthrene	ND	35	12	ug/kg	/ 3
129-00-0	Pyrene	ND	35	11	ug/kg	13
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	180	9.0	ug/kg	121
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	6
367-12-4	2-Fluorophenol	69%		23-1	15%	

ND = Not detected

4165-62-2

MDL = Method Detection Limit

70%

RL = Reporting Limit

E = Indicates value exceeds calibration range

Phenol-d5

J = Indicates an estimated value

27-114%

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound



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Client Sample ID: FTFSS-1 Lab Sample ID: Matrix:

JC36373-1

SO - Soil SW846 8270D SW846 3546 Date Received: 01/27/17 Percent Solids: 92.4

Date Sampled: 01/25/17

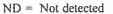
Method: Project:

BMSMC, PR

ABN Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
118-79-6	2,4,6-Tribromophenol	82%		19-152%
4165-60-0	Nitrobenzene-d5	69%		26-134%
321-60-8	2-Fluorobiphenyl	71%		39-124%
1718-51-0	Terphenyl-d14	71%		36-134%





MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Report of Analysis

Page 1 of 1

Client Sample ID: FTFSS-1 Lab Sample ID:

JC36373-1

SO - Soil

Date Sampled: 01/25/17 Date Received: 01/27/17

Matrix: Method:

SW846 8270D BY SIM SW846 3546

Percent Solids: 92.4

Project:

BMSMC, PR

Q

	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
Run #1	4M69683.D	1	01/31/17	SG	01/30/17	OP173A	E4M3202
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	1.0 ml

Run #2

CAS No.	Compound	Result	RL	MDL	Units
50-32-8 53-70-3	Benzo(a)pyrene Dibenzo(a,h)anthracene	ND ND	3.5 3.5	0.86 0.82	ug/kg ug/kg
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limi	ts
4165-60-0	Nitrobenzene-d5	48%		15-13	
321-60-8	2-Fluorobiphenyl	56%		12-14	
1718-51-0	Terphenyl-d14	77%		10-15	57%



ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

Report of Analysis

By

XPL

Page 1 of 1

Client Sample ID: FTFSS-1 Lab Sample ID:

JC36373-1

Date Sampled: 01/25/17

Matrix: Method: SO - Soil SW846-8015C (DAI)

DF

1

Date Received: 01/27/17

Project:

Percent Solids: 92.4

BMSMC, PR

Prep Batch n/a

Q

Prep Date

n/a

Analytical Batch GGH5640

Run #1 Run #2

Initial Weight

GH108425.D

Run #1 5.0 g

Run #2

Low Molecular Alcohol List

File ID

CAS No.	Compound	Result	RL	MDL	Units
64-17-5	Ethanol	ND	110	75	ug/kg
78-83-1	Isobutyl Alcohol	ND	110	64	ug/kg
67-63-0	Isopropyl Alcohol	ND	110	62	ug/kg
71-23-8	n-Propyl Alcohol	ND	110	44	ug/kg
71-36-3	n-Butyl Alcohol	ND	110	59	ug/kg
78-92-2	sec-Butyl Alcohol	ND	110	58	ug/kg
67-56-1	Methanol	ND	220	52	ug/kg
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its
111-27-3	Hexanol	101%		52-1	41%
111-27-3	Hexanol	107%		52-1	41%

Analyzed

01/30/17





MDL = Method Detection Limit

RL = Reporting Limit

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



E = Indicates value exceeds calibration range

Page 1 of 1

Client Sample ID: FTFSS-1 Lab Sample ID:

JC36373-1

Matrix: Method: Project:

SO - Soil

SW846 8081B SW846 3546

BMSMC, PR

Date Sampled: 01/25/17

Q

Percent Solids: 92.4

Date Received: 01/27/17

Analytical Batch File 1D DF By Prep Date Prep Batch Analyzed OP215 G4G2017 Run #1 4G77553.D 1 02/01/17 KD 01/31/17

Run #2

Run #1

Run #2

Initial Weight

Final Volume

15.7 g

10.0 ml

Pesticide TCL List

CAS No. Compound		Result	RL	MDL	Units
309-00-2	Aldrin	ND	0.69	0.33	ug/kg
319-84-6	alpha-BHC	ND	0.69	0.37	ug/kg
319-85-7	beta-BHC	ND	0.69	0.43	ug/kg
319-86-8	delta-BHC	ND	0.69	0.31	ug/kg
58-89-9	gamma-BHC (Lindane)	ND	0.69	0.30	ug/kg
5103-71-9	alpha-Chlordane	ND	0.69	0.33	ug/kg
5103-74-2	gamma-Chlordane	ND	0.69	0.30	ug/kg
60-57-1	Dieldrin	ND	0.69	0.34	ug/kg
72-54-8	4,4'-DDD	ND	0.69	0.44	ug/kg
72-55-9	4,4'-DDE	ND	0.69	0.36	ug/kg
50-29-3	4,4'-DDT	ND	0.69	0.41	ug/kg
72-20-8	Endrin	ND	0.69	0.32	ug/kg
1031-07-8	Endosulfan sulfate	ND	0.69	0.28	ug/kg
7421-93-4	Endrin aldehyde	ND	0.69	0.41	ug/kg
959-98-8	Endosulfan-I	ND	0.69	0.36	ug/kg
33213-65-9	Endosulfan-II	ND	0.69	0.36	ug/kg
76-44-8	Heptachlor	ND	0.69	0.34	ug/kg
1024-57-3	Heptachlor epoxide	ND	0.69	0.37	ug/kg
72-43-5	Methoxychlor	ND	1.4	0.34	ug/kg
53494-70-5	Endrin ketone	ND	0.69	0.53	ug/kg
8001-35-2	Toxaphene	ND	17	7.2	ug/kg
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limi	ts

CAS No.	Surrogate Recoveries	Kuli# I	Kuii# 2	Limits
877-09-8	Tetrachloro-m-xylene	91%		25-135%
877-09-8	Tetrachloro-m-xylene	85%		25-135%
2051-24-3	Decachlorobiphenyl	94%		10-156%
2051-24-3	Decachlorobiphenyl	78%		10-156%



ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank





Report of Analysis

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Client Sample ID: FTFSS-2 Lab Sample ID: JC36373-2 SO - Soil

Matrix: Method:

Project:

SW846 8270D SW846 3546

BMSMC, PR

Date Sampled: 01/25/17

Date Received: 01/27/17

Percent Solids: 89.2

	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
Run #1	6P34792.D	1	02/08/17	AC	01/30/17	OP173	E6P1601
Run #2 a	6P34917.D	1	02/11/17	AD	02/10/17	OP432	E6P1606

	Initial Weight	Final Volume
Run #1 Run #2	30.8 g	1.0 ml
Run #2	30.8 g	1.0 ml

ABN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	73	18	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	180	22	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	180	31	ug/kg	
105-67-9	2.4-Dimethylphenol	ND	180	65	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	180	140	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	180	39	ug/kg	
95-48-7	2-Methylphenol	ND	73	23	ug/kg	
	3&4-Methylphenol	ND	73	30	ug/kg	
88-75-5	2-Nitrophenol	ND	180	24	ug/kg	
100-02-7	4-Nitrophenol	ND .	360	97	ug/kg	
87-86-5	Pentachlorophenol	ND	150	34	ug/kg	
108-95-2	Phenol	ND	73	19	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	180	24	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	180	27	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	180	22	ug/kg	
83-32-9	Acenaphthene	ND	36	13	ug/kg	
208-96-8	Acenaphthylene	ND	36	18	ug/kg	
98-86-2	Acetophenone	ND	180	7.8	ug/kg	
120-12-7	Anthracene	ND	36	22	ug/kg	
1912-24-9	Atrazine	ND	73	16	ug/kg	
56-55-3	Benzo(a)anthracene	22.5	36	10	ug/kg	J
205-99-2	Benzo(b)fluoranthene	31.1	36	16	ug/kg	J
191-24-2	Benzo(g,h,i)perylene	18.9	36	18	ug/kg	J
207-08-9	Benzo(k)fluoranthene	ND	36	17	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	73	14	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	73	8.9	ug/kg	
92-52-4	1,1'-Biphenyl	ND	73	5.0	ug/kg	
100-52-7	Benzaldehyde	ND	180	9.0	ug/kg	
91-58-7	2-Chloronaphthalene	ND	73	8.7	ug/kg	
106-47-8	4-Chloroaniline	ND	180	13	ug/kg	
86-74-8	Carbazole	ND	73	5.3	ug/kg	
105-60-2	Caprolactam	ND	73	14	ug/kg	

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound



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Client Sample ID: FTFSS-2 Lab Sample ID: JC36373-2 Matrix: SO - Soil

SW846 8270D SW846 3546

Project: BMSMC, PR **Date Sampled:** 01/25/17 Date Received: 01/27/17

Percent Solids: 89.2

ABN Special List

Method:

CAS No.	Compound	Result	RL	MDL	Units	Q	
218-01-9	Chrysene	22.6	36	11	ug/kg	J	
111-91-1	bis(2-Chloroethoxy)methane	ND	73	7.8	ug/kg		
111-44-4	bis(2-Chloroethyl)ether	ND	73	16	ug/kg		
108-60-1	bis(2-Chloroisopropyl)ether	ND	73	13	ug/kg		
7005-72-3	4-Chlorophenyl phenyl ether	ND	73	12	ug/kg		
121-14-2	2,4-Dinitrotoluene	ND	36	11	ug/kg		
606-20-2	2,6-Dinitrotoluene	ND	36	18	ug/kg		
91-94-1	3,3'-Dichlorobenzidine	ND	73	30	ug/kg		
123-91-1	1,4-Dioxane	ND	36	24	ug/kg		
132-64-9	Dibenzofuran	ND	73	15	ug/kg		
84-74-2	Di-n-butyl phthalate	ND	73	5.9	ug/kg		
117-84-0	Di-n-octyl phthalate	ND	73	9.1	ug/kg		
84-66-2	Diethyl phthalate	ND	73	7.8	ug/kg		
131-11-3	Dimethyl phthalate	ND	73	6.5	ug/kg		
117-81-7	bis(2-Ethylhexyl)phthalate	53.9	73	8.5	ug/kg	J	
206-44-0	Fluoranthene	37.0	36	16	ug/kg		
86-73-7	Fluorene	ND	36	17	ug/kg		
118-74-1	Hexachlorobenzene	ND	73	9.2	ug/kg		
87-68-3	Hexachlorobutadiene	ND	36	15	ug/kg		
77-47-4	Hexachlorocyclopentadiene	ND	360	14	ug/kg		
67-72-1	Hexachloroethane	ND	180	18	ug/kg		
193-39-5	Indeno(1,2,3-cd)pyrene	21.1	36	17	ug/kg	J	
78-59-1	Isophorone	ND	73	7.8	ug/kg		
90-12-0	1-Methylnaphthalene	ND	73	7.1	ug/kg		
91-57-6	2-Methylnaphthalene	ND	73	8.2	ug/kg		
88-74-4	2-Nitroaniline	ND	180	8.6	ug/kg		
99-09-2	3-Nitroaniline	ND	180	9.1	ug/kg		
100-01-6	4-Nitroaniline	ND	180	9.4	ug/kg		
91-20-3	Naphthalene	ND	36	10	ug/kg		
98-95-3	Nitrobenzene	ND	73	14	ug/kg		
621-64-7	N-Nitroso-di-n-propylamine	ND	73	11	ug/kg		
86-30-6	N-Nitrosodiphenylamine	ND	180	13	ug/kg		
85-01-8	Phenanthrene	17.2	36	12	ug/kg	J	
129-00-0	Pyrene	33.8	36	12	ug/kg	ال ا	ż
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	180	9.2	ug/kg	/3	1
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	iits		100
367-12-4	2-Fluorophenol	137% b	74%	23-1	115%	(3)	1
4165-62-2	Phenol-d5	138% b	78%		114%		1
						/	10

ND = Not detected

MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound



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Client Sample ID: FTFSS-2 Lab Sample ID:

JC36373-2 SO - Soil

Date Sampled: 01/25/17 Date Received: 01/27/17

Matrix: Method:

SW846 8270D SW846 3546

Percent Solids: 89.2

Project:

BMSMC, PR

ABN Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
118-79-6	2,4,6-Tribromophenol	168% b	95%	19-152%
4165-60-0	Nitrobenzene-d5	139% b	90%	26-134%
321-60-8	2-Fluorobiphenyl	137% b	85%	39-124%
1718-51-0	Terphenyl-d14	141% b	86%	36-134%

(a) Confirmation run.

(b) Outside in house control limits biased high. The results confirmed by re-extraction outside the holding time.



B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

321-60-8

1718-51-0

Report of Analysis

Page 1 of 1

Client Sample ID: FTFSS-2 Lab Sample ID: JC36373-2 Matrix:

SO - Soil Method: SW846 8270D BY SIM SW846 3546

Project: BMSMC, PR

Date Sampled: 01/25/17 Date Received: 01/27/17

Percent Solids: 89.2

0

File ID **Analytical Batch** DF Prep Date Prep Batch Analyzed By Run #1 4M69660.D E4M3201 1 01/30/17 SG 01/30/17 **OP173A** Run #2

Final Volume Initial Weight Run #1 30.8 g 1.0 ml Run #2

2-Fluorobiphenyl

Terphenyl-d14

CAS No. RL MDL Compound Result Units 50-32-8 19.7 3.6 0.88 Benzo(a)pyrene ug/kg 53-70-3 Dibenzo(a,h)anthracene ND 3.6 0.85 ug/kg CAS No. Run# 2 Surrogate Recoveries Run# 1 Limits 4165-60-0 Nitrobenzene-d5 92% 15-138%

110%

146%



12-148%

10-157%

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Page 1 of 1

Client Sample ID: FTFSS-2 Lab Sample ID: JC36373-2 Matrix: SO - Soil

SW846-8015C (DAI)

Date Sampled: 01/25/17 Date Received: 01/27/17

Percent Solids: 89.2

Method: Project:

BMSMC, PR

	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
Run #1	GH108426.D	1	01/30/17	XPL	n/a	n/a	GGH5640

Run #2

Initial Weight

Run #1 5.0 g

Run #2

Low Molecular Alcohol List

CAS No.	Compound	Result	RL	MDL	Units	Q
64-17-5	Ethanol	ND	110	77	ug/kg	
78-83-1	Isobutyl Alcohol	ND	110	66	ug/kg	
67-63-0	lsopropyl Alcohol	ND	110	64	ug/kg	
71-23-8	n-Propyl Alcohol	ND	110	45	ug/kg	
71-36-3	n-Butyl Alcohol	ND	110	61	ug/kg	
78-92-2	sec-Butyl Alcohol	ND	110	60	ug/kg	
67-56-1	Methanol	ND	220	54	ug/kg	
CAC N-	C	D# 1	D# 2	T	ia.	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	113	
111-27-3	Hexanol	99%		52-1	41%	
111-27-3	Hexanol	143% a		52-1	41%	

(a) High percent recovery and no positive found in sample.



ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Client Sample ID:	FTFSS-2
Lab Sample ID:	JC36373-2
L	

Matrix: Method: SO - Soil

SGS Accutest LabLink@946497 13:15 17-Feb-2017

SW846 8081B SW846 3546

10.0 ml

Date Received: 01/27/17

Date Sampled: 01/25/17

Project:

BMSMC, PR

Percent Solids: 89.2

Run #1 Run #2

File 1D 4G77554.D

15.6 g

DF Analyzed 02/01/17

By **Prep Date** KD 01/31/17

Prep Batch OP215

Analytical Batch G4G2017

Final Volume Initial Weight

Run #1 Run #2

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units
309-00-2	Aldrin	ND	0.72	0.34	ug/kg
319-84-6	alpha-BHC	ND	0.72	0.39	ug/kg
319-85-7	beta-BHC	ND	0.72	0.45	ug/kg
319-86-8	delta-BHC	ND	0.72	0.32	ug/kg
58-89-9	gamma-BHC (Lindane)	ND	0.72	0.32	ug/kg
5103-71-9	alpha-Chlordane	ND	0.72	0.34	ug/kg
5103-74-2	gamma-Chlordane	ND	0.72	0.32	ug/kg
60-57-1	Dieldrin	ND	0.72	0.36	ug/kg
72-54-8	4,4'-DDD	ND	0.72	0.46	ug/kg
72-55-9	4,4'-DDE	ND	0.72	0.37	ug/kg
50-29-3	4,4'-DDT	ND	0.72	0.43	ug/kg
72-20-8	Endrin	ND	0.72	0.34	ug/kg
1031-07-8	Endosulfan sulfate	ND	0.72	0.29	ug/kg
7421-93-4	Endrin aldehyde	ND	0.72	0.43	ug/kg
959-98-8	Endosulfan-l	ND	0.72	0.38	ug/kg
33213-65-9	Endosulfan-II	ND	0.72	0.38	ug/kg
76-44-8	Heptachlor	ND	0.72	0.35	ug/kg
1024-57-3	Heptachlor epoxide	ND	0.72	0.39	ug/kg
72-43-5	Methoxychlor	ND	1.4	0.36	ug/kg
53494-70-5	Endrin ketone	ND	0.72	0.55	ug/kg
8001-35-2	Toxaphene	ND	18	7.5	ug/kg

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	79%		25-135%
877-09-8	Tetrachloso-m-xylene	79%		25-135%
2051-24-3	Decachlorobiphenyl	94%		10-156%
2051-24-3	Decachlorobiphenyl	66%		10-156%



ND = Not detected

MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

E = Indicates value exceeds calibration range

B = Indicates analyte found in associated method blank

Report of Analysis

Page 1 of 3

Client Sample ID: FTFSS-3 Lab Sample ID: JC36373-3 SO - Soil

Matrix: Method:

SW846 8270D SW846 3546

Date Sampled: 01/25/17 Date Received: 01/27/17

Percent Solids: 94.4

Project: BMSMC, PR

File ID DF Analyzed By Run #1 02/08/17 6P34793.D 1 AC

Prep Date Prep Batch 01/30/17 OP173

Analytical Batch

E6P1601

Run #2

Initial Weight

Final Volume

30.5 g 1.0 ml

Run #1 Run #2

ABN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	69	17	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	170	21	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	170	30	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	170	62	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	170	130	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	170	37	ug/kg	
95-48-7	2-Methylphenol	ND	69	22	ug/kg	
	3&4-Methylphenol	ND	69	29	ug/kg	
88-75-5	2-Nitrophenol	ND	170	23	ug/kg	
100-02-7	4-Nitrophenol	ND	350	93	ug/kg	
87-86-5	Pentachlorophenol	ND	140	33	ug/kg	
108-95-2	Phenol	59.9	69	18	ug/kg	J
58-90-2	2,3,4,6-Tetrachlorophenol	ND	170	23	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	170	26	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	170	21	ug/kg	
83-32-9	Acenaphthene	ND	35	12	ug/kg	
208-96-8	Acenaphthylene	ND	35	18	ug/kg	
98-86-2	Acetophenone	ND	170	7.5	ug/kg	
120-12-7	Anthracene	ND	35	21	ug/kg	
1912-24-9	Atrazine	ND	69	15	ug/kg	
56-55-3	Benzo(a)anthracene	ND	35	9.8	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	35	15	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	35	17	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	35	16	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	69	13	ug/kg	
85-68-7	Butyl benzyl phthalate	104	69	8.5	ug/kg	
92-52-4	I, I'-Biphenyl	ND	69	4.8	ug/kg	
100-52-7	Benzaldehyde	23.5	170	8.6	ug/kg	J
91-58-7	2-Chloronaphthalene	ND	69	8.3	ug/kg	
106-47-8	4-Chloroaniline	ND	170	13	ug/kg	
86-74-8	Carbazole	ND	69	5.0	ug/kg	
105-60-2	Caprolactam	ND	69	14	ug/kg	

tael Infante Méndez 1(= 1888

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Client Sample ID: FTFSS-3 Lab Sample ID: JC36373-3

Matrix: Method:

Project:

SO - Soil

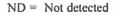
SW846 8270D SW846 3546 BMSMC, PR

Date Sampled: 01/25/17 Date Received: 01/27/17

Percent Solids: 94.4

ABN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
218-01-9	Chrysene	ND	35	11	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	69	7.4	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	69	15	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	69	12	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	69	11	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	35	11	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	35	17	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	69	29	ug/kg	
123-91-1	1,4-Dioxane	ND	35	23	ug/kg	
132-64-9	Dibenzofuran	ND	69	14	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	69	5.7	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	69	8.6	ug/kg	
84-66-2	Diethyl phthalate	ND	69	7.4	ug/kg	
131-11-3	Dimethyl phthalate	ND	69	6.2	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	146	69	8.1	ug/kg	
206-44-0	Fluoranthene	ND	35	15	ug/kg	
86-73-7	Fluorene	ND	35	16	ug/kg	
118-74-1	Hexachlorobenzene	ND	69	8.8	ug/kg	
87-68-3	Hexachlorobutadiene	ND	35	14	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	350	14	ug/kg	
67-72-1	Hexachloroethane	ND	170	17	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	35	16	ug/kg	
78-59-1	Isophorone	ND	69	7.4	ug/kg	
90-12-0	1-Methylnaphthalene	ND	69	6.8	ug/kg	
91-57-6	2-Methylnaphthalene	ND	69	7.8	ug/kg	
88-74-4	2-Nitroaniline	ND	170	8.2	ug/kg	
99-09-2	3-Nitroaniline	ND	170	8.7	ug/kg	
100-01-6	4-Nitroaniline	ND	170	9.0	ug/kg	
91-20-3	Naphthalene	ND	35	9.8	ug/kg	
98-95-3	Nitrobenzene	ND	69	13	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	69	10	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	170	13	ug/kg	
85-01-8	Phenanthrene	ND	35	12	ug/kg	SOCIADO
129-00-0	Pyrene	ND	35	11	ug/kg	SE MOCHOO OF PER
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	170	8.8	ug/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	duel Infante Méndez IC = 1888
367-12-4	2-Fluorophenol	61%		23_1	15%	
4165-62-2	Phenol-d5	60%			14%	MICO LICENCINGO



MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Page 3 of 3

Client Sample ID: FTFSS-3 Lab Sample ID:

JC36373-3 SO - Soil

Date Sampled: 01/25/17 Date Received: 01/27/17

Matrix: Method:

SW846 8270D SW846 3546

Percent Solids: 94.4

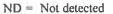
Project:

BMSMC, PR

ABN Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
118-79-6	2,4,6-Tribromophenol	64%		19-152%
4165-60-0	Nitrobenzene-d5	60%		26-134%
321-60-8	2-Fluorobiphenyl	62%		39-124%
1718-51-0	Terphenyl-d14	60%		36-134%





MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Client Sample ID:	FTFSS-3
Lab Sample ID:	JC36373-3
Matrix:	SO - Soil

Method: Project:

SGS Accutest LabLink@946497 13:15 17-Feb-2017

SW846 8270D BY SIM SW846 3546 BMSMC, PR

Date Sampled: 01/25/17 Date Received: 01/27/17 Percent Solids: 94.4

	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
Run #1	4M69684.D	1	01/31/17	SG	01/30/17	OP173A	E4M3202
Run #2							

Run #1 Run #2	30.5 g	1.0 ml	e				
CAS No.	Compound		Result	RL	MDL	Units	Q
50-32-8	Benzo(a)pyrene	;	ND	3.5	0.84	ug/kg	

53-70-3	Dibenzo(a,h)anthracene	ND	3.5	0.81	ug/kg
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limi	its
4165-60-0	Nitrobenzene-d5	48%		15-1	38%
321-60-8	2-Fluorobiphenyl	51%		12-1-	48%
1718-51-0	Terphenyl-d14	67%		10-1	57%



ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Page 1 of 1

Client Sample ID: FTFSS-3 Lab Sample ID: JC36373-3

Matrix: Method:

SO - Soil SW846-8015C (DAI)

Project:

BMSMC, PR

Date Sampled: 01/25/17

Date Received: 01/27/17

Percent Solids: 94.4

Analytical Batch File ID DF Analyzed By **Prep Date** Prep Batch Run #1 GH108427.D 01/30/17 XPL n/a GGH5640 1 n/a

Run #2

Initial Weight

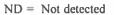
Run #1 5.0 g

Run #2

Low Molecular Alcohol List

CAS No.	Compound	Result	RL	MDL	Units	Q
64-17-5	Ethanol	ND	110	73	ug/kg	
78-83-1	Isobutyl Alcohol	ND	110	62	ug/kg	
67-63-0	Isopropyl Alcohol	ND	110	60	ug/kg	
71-23-8	n-Propyl Alcohol	ND	110	43	ug/kg	
71-36-3	n-Butyl Alcohoi	ND	110	58	ug/kg	
78-92-2	sec-Butyl Alcohol	ND	110	56	ug/kg	
67-56-1	Methanol	ND	210	51	ug/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limi	ts	
111-27-3	Hexanol	101%		52-14	11%	
111-27-3	Hexanol	96%		52-14	11%	





MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Report of Analysis

Page 1 of 1

Client Sample ID: FTFSS-3 Lab Sample ID:

JC36373-3

SO - Soil SW846 8081B SW846 3546

> Analyzed 02/01/17

Date Sampled: 01/25/17 Date Received: 01/27/17

Matrix: Method: Project:

BMSMC, PR

Percent Solids: 94.4

File ID

DF 4G77555.D 1

By **Prep Date** KD 01/31/17

Prep Batch OP215

Analytical Batch G4G2017

Run #1 Run #2

> Initial Weight 15.2 g

Final Volume 10.0 ml

Run #1 Run #2

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.70	0.33	ug/kg	
319-84-6	alpha-BHC	ND	0.70	0.37	ug/kg	
319-85-7	beta-BHC	ND	0.70	0.44	ug/kg	
319-86-8	delta-BHC	ND	0.70	0.32	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	0.70	0.31	ug/kg	
5103-71-9	alpha-Chlordane	ND	0.70	0.33	ug/kg	
5103-74-2	gamma-Chlordane	ND	0.70	0.31	ug/kg	
60-57-1	Dieldrin	ND	0.70	0.35	ug/kg	
72-54-8	4,4'-DDD	ND	0.70	0.45	ug/kg	
72-55-9	4,4'-DDE	ND	0.70	0.36	ug/kg	
50-29-3	4,4'-DDT	ND	0.70	0.41	ug/kg	
72-20-8	Endrin	ND	0.70	0.33	ug/kg	
1031-07-8	Endosulfan sulfate	ND	0.70	0.28	ug/kg	
7421-93-4	Endrin aldehyde	ND	0.70	0.41	ug/kg	
959-98-8	Endosulfan-I	ND	0.70	0.36	ug/kg	
33213-65-9	Endosulfan-II	ND	0.70	0.36	ug/kg	
76-44-8	Heptachlor a	0.69	0.70	0.34	ug/kg	J
1024-57-3	Heptachlor epoxide	ND	0.70	0.37	ug/kg	
72-43-5	Methoxychlor	ND	1.4	0.35	ug/kg	
53494-70-5	Endrin ketone	ND	0.70	0.54	ug/kg	
8001-35-2	Toxaphene	ND	17	7.2	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	88%		24-136%
877-09-8	Tetrachloro-m-xylene	83%		24-136%
2051-24-3	Decachlorobiphenyl	114%		10-153%
2051-24-3	Decachlorobiphenyl	81%		10-153%

(a) More than 40 % RPD for detected concentrations between the two GC columns.



ND = Not detected

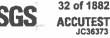
MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range



Report of Analysis

Page 1 of 3

Client Sample ID: BRSS-1

Lab Sample ID: JC36373-4 Matrix: SO - Soil

Method: SW846 8270D SW846 3546

Project: BMSMC, PR Date Sampled: 01/25/17 Date Received: 01/27/17

Percent Solids: 88.1

File ID DF Analyzed By Prep Date Prep Batch **Analytical Batch** 6P34788.D 01/30/17 OP173 E6P1601 Run #1 L 02/08/17 AC

Run #2

Initial Weight Final Volume

Run #1 30.8 g 1.0 ml

Run #2

ABN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	74	18	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	180	23	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	180	31	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	180	66	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	180	140	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	180	39	ug/kg	
95-48-7	2-Methylphenol	ND	74	24	ug/kg	
	3&4-Methylphenol	ND	74	30	ug/kg	
88-75-5	2-Nitrophenol	ND	180	24	ug/kg	
100-02-7	4-Nitrophenol	ND	370	98	ug/kg	
87-86-5	Pentachlorophenol	ND	150	35	ug/kg	
108-95-2	Phenol	ND	74	19	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	180	24	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	180	28	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	180	22	ug/kg	
83-32-9	Acenaphthene	ND	37	13	ug/kg	
208-96-8	Acenaphthylene	ND	37	19	ug/kg	
98-86-2	Acetophenone	ND	180	7.9	ug/kg	
120-12-7	Anthracene	ND	37	23	ug/kg	
1912-24-9	Atrazine	ND	74	16	ug/kg	
56-55-3	Benzo(a)anthracene	ND	37	10	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	37	16	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	37	18	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	37	17	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	74	14	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	74	9.0	ug/kg	
92-52-4	1, l'-Biphenyl	ND	74	5.0	ug/kg	
100-52-7	Benzaldehyde	26.0	180	9.1	ug/kg	J
91-58-7	2-Chloronaphthalene	ND	74	8.8	ug/kg	
106-47-8	4-Chloroaniline	ND	180	13	ug/kg	
86-74-8	Carbazole	ND	74	5.3	ug/kg	
105-60-2	Caprolactam	ND	74	15	ug/kg	



ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Client Sample ID: BRSS-1 Lab Sample ID: JC36373-4

Matrix: Method: SO - Soil

Date Received: 01/27/17

Date Sampled: 01/25/17

SW846 8270D SW846 3546

Percent Solids: 88.1

Project: BMSMC, PR

ABN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
218-01-9	Chrysene	ND	37	12	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	74	7.9	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	74	16	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	74	13	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	74	12	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	37	11	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	37	19	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	. 74	31	ug/kg	
123-91-1	1,4-Dioxane	ND	37	24	ug/kg	
132-64-9	Dibenzofuran	ND	74	15	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	74	6.0	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	74	9.2	ug/kg	
84-66-2	Diethyl phthalate	ND	74	7.8	ug/kg	
131-11-3	Dimethyl phthalate	ND	74	6.6	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	74	8.6	ug/kg	
206-44-0	Fluoranthene	ND	37	16	ug/kg	
86-73-7	Fluorene	ND	37	17	ug/kg	
118-74-1	Hexachlorobenzene	ND	74	9.3	ug/kg	
87-68-3	Hexachlorobutadiene	ND	37	15	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	370	15	ug/kg	
67-72-1	Hexachloroethane	ND	180	18	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	37	17	ug/kg	
78-59-1	Isophorone	ND	74	7.9	ug/kg	
90-12-0	1-Methylnaphthalene	ND	74	7.2	ug/kg	
91-57-6	2-Methylnaphthalene	ND	74	8.3	ug/kg	
88-74-4	2-Nitroaniline	ND	180	8.7	ug/kg	
99-09-2	3-Nitroaniline	ND	180	9.2	ug/kg	
100-01-6	4-Nitroaniline	ND	180	9.5	ug/kg	
91-20-3	Naphthalene	ND	37	10	ug/kg	
98-95-3	Nitrobenzene	ND	74	14	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	74	11	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	180	13	ug/kg	SOCIADO DA
85-01-8	Phenanthrene	ND	37	12	ug/kg	At Market
129-00-0	Pyrene	ND	37	12	ug/kg	186
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	180	9.4	ug/kg	tael Infante (2)
						Méndez 5
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	tuel Infante Mendez IC = 1888
367-12-4	2-Fluorophenol	63%		23-1	15%	The state of
4165-62-2	Phenol-d5	63%			14%	LINICO LICENCIADO



MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Page 3 of 3

Client Sample ID: BRSS-1

Lab Sample ID: JC36373-4
Matrix: SO - Soil

Method: SW846 8270D SW846 3546

Project: BMSMC, PR

Date Sampled: 01/25/17 **Date Received:** 01/27/17

Percent Solids: 88.1

ABN Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
118-79-6	2,4,6-Tribromophenol	77%		19-152%
4165-60-0	Nitrobenzene-d5	62%		26-134%
321-60-8	2-Fluorobiphenyl	67%		39-124%
1718-51-0	Terphenyl-d14	68%		36-134%



ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Report of Analysis

Ву

SG

Page 1 of 1

Client Sample ID: BRSS-1

Lab Sample ID: Matrix:

JC36373-4 SO - Soil

SW846 8270D BY SIM SW846 3546

Prep Date

01/30/17

Date Sampled: 01/25/17 Date Received: 01/27/17

Percent Solids: 88.1

OP173A

Method: Project:

BMSMC, PR

Analyzed

01/31/17

Prep Batch **Analytical Batch** E4M3202

Run #1 Run #2

Initial Weight

4M69685.D

File ID

Final Volume 1.0 ml

DF

1

Run #1 30.8 g

Run #2

CAS No.	Compound	Result	RL	MDL	Units	Q
50-32-8 53-70-3	Benzo(a)pyrene	4.69 ND	3.7	0.90	ug/kg	

			_	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	55%		15-138%
321-60-8	2-Fluorobiphenyl	61%		12-148%
1718-51-0	Terphenyl-d14	90%		10-157%



ND = Not detected

MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

Client Sample ID: BRSS-1 Lab Sample ID: JC36373-4 Matrix: SO - Soil

Date Sampled: 01/25/17
Date Received: 01/27/17
Percent Solids: 88.1

Project:

BMSMC, PR

Metals Analysis

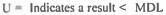
Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	Ву	Method	Prep Method
Aluminum	11900	57	2.2	mg/kg	1	02/01/17	02/02/17	ND	SW846 6010C ²	SW846 3050B ⁴
Antimony	0.42 B	2.3	0.33	mg/kg	1	02/01/17	02/02/17	ND	SW846 6010C ²	SW846 3050B ⁴
Arsenic	5.3	2.3	0.24	mg/kg	1	02/01/17	02/02/17	ND	SW846 6010C ²	SW846 3050B ⁴
Barium	92.9	23	0.092	mg/kg	1	02/01/17	02/02/17	ND	SW846 6010C ²	SW846 3050B ⁴
Beryllium	0.25	0.23	0.025	mg/kg	1	02/01/17	02/02/17	ND	SW846 6010C ²	SW846 3050B ⁴
Cadmium	0.66	0.57	0.057	mg/kg	1	02/01/17	02/02/17	ND	SW846 6010C ²	SW846 3050B ⁴
Calcium	2200	570	2.1	mg/kg	1	02/01/17	02/02/17	ND	SW846 6010C ²	SW846 3050B ⁴
Chromium	9.6	1.1	0.13	mg/kg	1	02/01/17	02/02/17	ND	SW846 6010C ²	SW846 3050B ⁴
Cobalt	5.6 B	5.7	0.067	mg/kg	1	02/01/17	02/02/17	ND	SW846 6010C ²	SW846 3050B ⁴
Copper	20.0	2.8	0.25	mg/kg	1	02/01/17	02/02/17	ND	SW846 6010C ²	SW846 3050B ⁴
Iron	16000	57	0.90	mg/kg	1	02/01/17	02/02/17	ND	SW846 6010C ²	SW846 3050B ⁴
Lead	13.2	2.3	0.25	mg/kg	1	02/01/17	02/02/17	ND	SW846 6010C ²	SW846 3050B ⁴
Magnesium	1410	570	6.7	mg/kg	1	02/01/17	02/02/17	ND	SW846 6010C ²	SW846 3050B ⁴
Manganese	432	1.7	0.041	mg/kg	1	02/01/17	02/02/17	ND	SW846 6010C ²	SW846 3050B ⁴
Mercury	0.14	0.037	0.0059	mg/kg	1	02/01/17	02/01/17	JA	SW846 7471B ¹	SW846 7471B ³
Nickel	3.7 B	4.5	0.086	mg/kg	1	02/01/17	02/02/17	ND	SW846 6010C ²	SW846 3050B ⁴
Potassium	735 B	1100	21	mg/kg	1	02/01/17	02/02/17	ND	SW846 6010C ²	SW846 3050B ⁴
Selenium	0.53 U	2.3	0.53	mg/kg	1	02/01/17	02/02/17	ND	SW846 6010C ²	SW846 3050B ⁴
Silver	0.31 B	0.57	0.11	mg/kg	1	02/01/17	02/02/17	ND	SW846 6010C ²	SW846 3050B ⁴
Sodium	73.3 B	1100	4.4	mg/kg	1	02/01/17	02/02/17	ND	SW846 6010C ²	SW846 3050B ⁴
Thallium	0.45 U	1.1	0.45	mg/kg	1	02/01/17	02/02/17	ND	SW846 6010C ²	SW846 3050B ⁴
Vanadium	44.8	5.7	0.094	mg/kg	1	02/01/17	02/02/17	ND	SW846 6010C ²	SW846 3050B ⁴
Zinc	121	5.7	0.25	mg/kg	1	02/01/17	02/02/17	ND	SW846 6010C ²	SW846 3050B ⁴

(1) Instrument QC Batch: MA41277(2) Instrument QC Batch: MA41292(3) Prep QC Batch: MP98464(4) Prep QC Batch: MP98471





MDL = Method Detection Limit



B = Indicates a result > = MDL but < RL



Report of Analysis

Ву

AC

Analyzed

02/08/17

Page 1 of 3

Client Sample ID: BRSS-1 DUP Lab Sample ID:

File ID

30.3 g

Matrix: Method: JC36373-5 SO - Soil

SW846 8270D SW846 3546

DF

1

Date Sampled: 01/25/17 Date Received: 01/27/17

Percent Solids: 88.2

Prep Batch

OP173

Project:

BMSMC, PR

Prep Date

01/30/17

Analytical Batch E6P1601

Run #1 Run #2

Initial Weight

6P34789.D

Final Volume

1.0 ml

Run #1 Run #2

ABN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	75	18	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	23	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	32	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	190	67	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	190	140	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	190	40	ug/kg	
95-48-7	2-Methylphenol	ND	75	24	ug/kg	
	3&4-Methylphenol	ND	75	31	ug/kg	
88-75-5	2-Nitrophenol	ND	190	25	ug/kg	
100-02-7	4-Nitrophenol	ND	370	100	ug/kg	
87-86-5	Pentachlorophenol	ND	150	35	ug/kg	
108-95-2	Phenol	ND	75	20	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	190	25	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	28	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	22	ug/kg	
83-32-9	Acenaphthene	ND	37	13	ug/kg	
208-96-8	Acenaphthylene	ND	37	19	ug/kg	
98-86-2	Acetophenone	ND	190	8.0	ug/kg	
120-12-7	Anthracene	ND	37	23	ug/kg	
1912-24-9	Atrazine	ND	75	16	ug/kg	
56-55-3	Benzo(a)anthracene	ND	37	11	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	37	17	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	37	19	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	37	17	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	75	14	ug/kg	001100
85-68-7	Butyl benzyl phthalate	ND	75	9.1	ug/kg	SOUNDO DE
92-52-4	1, 1'-Biphenyl	ND	75	5.1	ug/kg	J fuel Infante Mendez IC = 1888
100-52-7	Benzaldehyde	41.8	190	9.3	ug/kg	J July Infonte
91-58-7	2-Chloronaphthalene	ND	75	8.9	ug/kg	Minder 2
106-47-8	4-Chloroaniline	ND	190	13	ug/kg	1/ # 1888 S
86-74-8	Carbazole	ND	75	5.4	ug/kg	K - 1000
105-60-2	Caprolactam	ND	75	15	ug/kg	imated value
ND = Not o	detected MDL = Method I	Detection Li	mit	J = Indica	tes an esti	imated value

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Client Sample ID: BRSS-1 DUP Lab Sample ID: JC36373-5

Matrix: SO - Soil Method: SW846 8270D SW846 3546

Project: BMSMC, PR Date Sampled: 01/25/17 Date Received: 01/27/17

Percent Solids: 88.2

ABN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
218-01-9	Chrysene	ND	37	12	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	75	8.0	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	75	16	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	75	13	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	75	12	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	37	12	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	37	19	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	75	31	ug/kg	
123-91-1	1,4-Dioxane	ND	37	25	ug/kg	
132-64-9	Dibenzofuran	ND	75	15	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	75	6.1	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	75	9.3	ug/kg	
84-66-2	Diethyl phthalate	ND	75	8.0	ug/kg	
131-11-3	Dimethyl phthalate	ND	75	6.7	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	75	8.8	ug/kg	
206-44-0	Fluoranthene	ND	37	17	ug/kg	
86-73-7	Fluorene	ND	37	17	ug/kg	
118-74-1	Hexachlorobenzene	ND	75	9.5	ug/kg	
87-68-3	Hexachlorobutadiene	ND	37	15	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	370	15	ug/kg	
67-72-1	Hexachloroethane	ND	190	19	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	37	18	ug/kg	
78-59-1	Isophorone	ND	75	8.0	ug/kg	
90-12-0	1-Methylnaphthalene	ND	75	7.3	ug/kg	
91-57-6	2-Methylnaphthalene	ND	75	8.5	ug/kg	
88-74-4	2-Nitroaniline	ND	190	8.8	ug/kg	
99-09-2	3-Nitroaniline	ND	190	9.4	ug/kg	
100-01-6	4-Nitroaniline	ND	190	9.7	ug/kg	
91-20-3	Naphthalene	ND	37	11	ug/kg	
98-95-3	Nitrobenzene	ND	75	14	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	75	11	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	14	ug/kg	COCUDO
85-01-8	Phenanthrene	ND	37	13	ug/kg	STANDOUTE.
129-00-0	Pyrene	ND	37	12	ug/kg	18
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	190	9.5	ug/kg	fuel Infante
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	Méndez 10 = 1888
		m10/				1
367-12-4	2-Fluorophenol	71%		23-1		Was such
4165-62-2	Phenol-d5	73%		27-1	14%	MICO LICENCY

ND = Not detected

MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound



Page 3 of 3

Client Sample ID: BRSS-1 DUP Lab Sample ID: JC36373-5 Matrix:

SO - Soil

SW846 8270D SW846 3546 BMSMC, PR

Date Sampled: 01/25/17 Date Received: 01/27/17

Percent Solids: 88.2

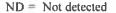
ABN Special List

Method:

Project:

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
118-79-6	2,4,6-Tribromophenol	86%		19-152%
4165-60-0	Nitrobenzene-d5	74%		26-134%
321-60-8	2-Fluorobiphenyl	75%		39-124%
1718-51-0	Terphenyl-d14	77%		36-134%





MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

Report of Analysis

Page 1 of 1

Client Sample ID: BRSS-1 DUP JC36373-5 Lab Sample ID:

Matrix: Method: SO - Soil SW846 8270D BY SIM SW846 3546

DF

1

Date Sampled: 01/25/17 Date Received: 01/27/17

Percent Solids: 88.2

Project: BMSMC, PR

File ID Run #1 4M69663.D Run #2

Analyzed 01/30/17

By SG

Prep Date Prep Batch 01/30/17

OP173A

Analytical Batch E4M3201

Initial Weight Final Volume Run #1 30.3 g 1.0 ml

Run #2

50-32-8

53-70-3

CAS No. Compound

Benzo(a)pyrene

Dibenzo(a,h)anthracene

Result 4.17 ND

3.7 0.91 3.7 0.87

Run# 2

RL

MDL

ug/kg ug/kg

Units

Q

CAS No. Surrogate Recoveries

4165-60-0 Nitrobenzene-d5 321-60-8 2-Fluorobiphenyl 1718-51-0 Terphenyl-d14

50% 55% 84%

Run# 1

15-138% 12-148% 10-157%

Limits



ND = Not detected RL = Reporting Limit

E = Indicates value exceeds calibration range

MDL = Method Detection Limit

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

Client Sample ID: BRSS-1 DUP Lab Sample ID: JC36373-5 Matrix: SO - Soil

Date Sampled: 01/25/17 Date Received: 01/27/17 Percent Solids: 88.2

Project:

BMSMC, PR

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed I	Ву	Method	Prep Method
Aluminum	13000	54	2.1	mg/kg	1	02/01/17	02/02/17 N	ND	SW846 6010C ²	SW846 3050B ⁴
Antimony	0.32 U	2.2	0.32	mg/kg	1	02/01/17	02/02/17 N	ND	SW846 6010C ²	SW846 3050B 4
Arsenic	5.4	2.2	0.23	mg/kg	1	02/01/17	02/02/17 N	ND	SW846 6010C ²	SW846 3050B 4
Barium	107	22	0.087	mg/kg	1	02/01/17	02/02/17 N	ND	SW846 6010C ²	SW846 3050B 4
Beryllium	0.25	0.22	0.024	mg/kg	1	02/01/17	02/02/17 N	ND	SW846 6010C ²	SW846 3050B 4
Cadmium	0.73	0.54	0.054	mg/kg	1	02/01/17	02/02/17 N	ND	SW846 6010C ²	SW846 3050B 4
Calcium	2500	540	2.0	mg/kg	1	02/01/17	02/02/17 N	ND	SW846 6010C ²	SW846 3050B ⁴
Chromium	16.4	1.1	0.13	mg/kg	1	02/01/17	02/02/17 N	ND	SW846 6010C ²	SW846 3050B ⁴
Cobalt	6.5	5.4	0.064	mg/kg	1	02/01/17	02/02/17 N	ND	SW846 6010C ²	SW846 3050B ⁴
Copper	22.3	2.7	0.23	mg/kg	1	02/01/17	02/02/17 N	ND	SW846 6010C ²	SW846 3050B ⁴
Iron	18100	54	0.86	mg/kg	1	02/01/17	02/02/17 N	ND	SW846 6010C ²	SW846 3050B ⁴
Lead	14.2	2.2	0.24	mg/kg	1	02/01/17	02/02/17 N	ND	SW846 6010C ²	SW846 3050B ⁴
Magnesium	1710	540	6.3	mg/kg	1	02/01/17	02/02/17 N	ND	SW846 6010C ²	SW846 3050B ⁴
Manganese	512	1.6	0.039	mg/kg	1	02/01/17	02/02/17 N	ΝD	SW846 6010C ²	SW846 3050B ⁴
Mercury	0.33	0.036	0.0057	mg/kg	1	02/01/17	02/01/17 J	ΙA	SW846 7471B ¹	SW846 7471B ³
Nickel	8.0	4.3	0.082	mg/kg	1	02/01/17	02/02/17 N	ND	SW846 6010C ²	SW846 3050B ⁴
Potassium	891 B	1100	20	mg/kg	1	02/01/17	02/02/17 N	ND	SW846 6010C ²	SW846 3050B ⁴
Selenium	0.63 B	2.2	0.50	mg/kg	1	02/01/17	02/02/17 N	ND	SW846 6010C ²	SW846 3050B ⁴
Silver	0.26 B	0.54	0.11	mg/kg	1	02/01/17	02/02/17 N	ΝD	SW846 6010C ²	SW846 3050B ⁴
Sodium	83.8 B	1100	4.2	mg/kg	1	02/01/17	02/02/17 N	ND	SW846 6010C ²	SW846 3050B ⁴
Thallium	0.45 B	1.1	0.43	mg/kg	1	02/01/17	02/02/17 N	ND	SW846 6010C ²	SW846 3050B ⁴
Vanadium	52.0	5.4	0.090	mg/kg	1	02/01/17	02/02/17 N	ND	SW846 6010C ²	SW846 3050B ⁴
Zinc	129	5.4	0.24	mg/kg	1	02/01/17	02/02/17 N	ND	SW846 6010C ²	SW846 3050B ⁴

(1) Instrument QC Batch: MA41277(2) Instrument QC Batch: MA41292(3) Prep QC Batch: MP98464(4) Prep QC Batch: MP98471



Report of Analysis

Page 1 of 3

Client Sample ID: BRSS-2

Lab Sample ID:

JC36373-6

Matrix: Method: SO - Soil

SW846 8270D SW846 3546

Date Received: 01/27/17

Date Sampled: 01/25/17

Percent Solids: 79.1

Project:

BMSMC, PR

File ID DF

By Analyzed 02/08/17 AC Prep Date 01/30/17

Prep Batch OP173

Analytical Batch E6P1601

Run #1 Run #2

Run #2

Initial Weight

6P34794.D

Final Volume

Run #1 30.4 g

1.0 ml

1

ABN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	83	21	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	210	25	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	210	35	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	210	74	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	210	160	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	210	44	ug/kg	
95-48-7	2-Methylphenol	ND	83	27	ug/kg	
	3&4-Methylphenol	ND	83	34	ug/kg	
88-75-5	2-Nitrophenol	ND	210	27	ug/kg	
100-02-7	4-Nitrophenol	ND	420	110	ug/kg	
87-86-5	Pentachlorophenol	ND	170	39	ug/kg	
108-95-2	Phenol	ND	83	22	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	210	28	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	210	31	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	210	25	ug/kg	
83-32-9	Acenaphthene	ND	42	14	ug/kg	
208-96-8	Acenaphthylene	ND	42	21	ug/kg	
98-86-2	Acetophenone	ND	210	8.9	ug/kg	
120-12-7	Anthracene	ND	42	25	ug/kg	
1912-24-9	Atrazine	ND	83	18	ug/kg	
56-55-3	Benzo(a)anthracene	ND	42	12	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	42	18	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	42	21	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	42	19	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	83	16	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	83	10	ug/kg	
92-52-4	1, 1'-Biphenyl	ND	83	5.7	ug/kg	
100-52-7	Benzaldehyde	39.1	210	10	ug/kg	J
91-58-7	2-Chloronaphthalene	ND	83	9.9	ug/kg	
106-47-8	4-Chloroaniline	ND	210	15	ug/kg	
86-74-8	Carbazole	ND	83	6.0	ug/kg	
105-60-2	Caprolactam	ND	83	16	ug/kg	



ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Client Sample ID: BRSS-2 Lab Sample ID: JC36373-6

Matrix: SO - Soil

Method: Project: BMSMC, PR

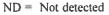
SW846 8270D SW846 3546

Date Sampled: 01/25/17 Date Received: 01/27/17

Percent Solids: 79.1

ABN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
218-01-9	Chrysene	ND	42	13	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	83	8.9	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	83	18	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	83	15	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	83	13	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	42	13	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	42	21	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	83	35	ug/kg	
123-91-1	1,4-Dioxane	ND	42	27	ug/kg	
132-64-9	Dibenzofuran	ND	83	17	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	83	6.8	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	83	10	ug/kg	
84-66-2	Diethyl phthalate	ND	83	8.9	ug/kg	
131-11-3	Dimethyl phthalate	ND	83	7.4	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	83	9.7	ug/kg	
206-44-0	Fluoranthene	ND	42	19	ug/kg	
86-73-7	Fluorene	ND	42	19	ug/kg	
118-74-1	Hexachlorobenzene	ND	83	11	ug/kg	
87-68-3	Hexachlorobutadiene	ND	42	17	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	420	17	ug/kg	
67-72-1	Hexachloroethane	ND	210	21	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	42	20	ug/kg	
78-59-1	Isophorone	ND	83	8.9	ug/kg	
90-12-0	1-Methylnaphthalene	ND	83	8.2	ug/kg	
91-57-6	2-Methylnaphthalene	ND	83	9.4	ug/kg	
88-74-4	2-Nitroaniline	ND	210	9.8	ug/kg	
99-09-2	3-Nitroaniline	ND	210	10	ug/kg	
100-01-6	4-Nitroaniline	ND	210	11	ug/kg	
91-20-3	Naphthalene	ND	42	12	ug/kg	
98-95-3	Nitrobenzene	ND	83	16	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	83	12	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	210	15	ug/kg	
85-01-8	Phenanthrene	ND	42	14	ug/kg	L NOCHOO DE
129-00-0	Pyrene	ND	42	13	ug/kg	Ser.
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	210	11	ug/kg	art 1800WOO OF STREET
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	[‡] 2 Limits		Viendez
367-12-4	2-Fluorophenol	62%		23-1	15%	100
4165-62-2	Phenol-d5	59%			14%	MICO LICENCIADO



MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Page 3 of 3

Client Sample ID: BRSS-2

Lab Sample ID: Matrix:

Method:

Project:

JC36373-6 SO - Soil

SW846 8270D SW846 3546 BMSMC, PR

Date Sampled: 01/25/17 Date Received: 01/27/17

Percent Solids: 79.1

ABN Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
118-79-6	2,4,6-Tribromophenol	68%		19-152%
4165-60-0	Nitrobenzene-d5	65%		26-134%
321-60-8	2-Fluorobiphenyl	62%		39-124%
1718-51-0	Terphenyl-d14	57%		36-134%



B = Indicates analyte found in associated method blank

Report of Analysis

Page 1 of 1

Client Sample ID:	BRSS-2
Lab Sample ID: Matrix:	JC36373-6
Matrix:	SO - Soil

Method: SW846 8270D BY SIM SW846 3546 Date Sampled: 01/25/17 Date Received: 01/27/17 Percent Solids: 79.1

Q

10-157%

Project: BMSMC, PR

Terphenyl-d14

File ID DF Analyzed Ву **Prep Date Prep Batch Analytical Batch** Run #1 4M69664.D į 01/30/17 SG 01/30/17 **OP173A** E4M3201

Run #2

1718-51-0

	Initial Weight	Final Volume	
Run #1	30.4 g	1.0 ml	
Run #2	•		

CAS No.	Compound	Result	RL	MDL	Units
50-32-8 53-70-3	Benzo(a)pyrene Dibenzo(a,h)anthracene	7.74 ND	4.2 4.2	1.0 0.97	ug/kg ug/kg
CAS No.	Surrogate Recoveries	Run# I	Run# 2 Limi		its
4165-60-0 321-60-8	Nitrobenzene-d5 2-Fluorobiphenyl	42% 43%			38% 48%

59%



ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

Client Sample ID: BRSS-2 Lab Sample ID: JC36373-6 Matrix: SO - Soil

Date Sampled: 01/25/17 Date Received: 01/27/17 Percent Solids: 79.1

Project:

BMSMC, PR

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	22700	61	2.4	mg/kg	1	02/01/17	02/02/17 NE	SW846 6010C ²	SW846 3050B ⁴
Antimony	0.36 U	2.5	0.36	mg/kg	Ī	02/01/17	02/02/17 NE	SW846 6010C ²	SW846 3050B ⁴
Arsenic	5.2	2.5	0.26	mg/kg	1	02/01/17	02/02/17 ND	SW846 6010C ²	SW846 3050B ⁴
Barium	116	25	0.099	mg/kg	1	02/01/17	02/02/17 NE	SW846 6010C ²	SW846 3050B ⁴
Beryllium	0.25	0.25	0.027	mg/kg	1	02/01/17	02/02/17 ND	SW846 6010C ²	SW846 3050B ⁴
Cadmium	0.29 B	0.61	0.061	mg/kg	1	02/01/17	02/02/17 NE	SW846 6010C ²	SW846 3050B ⁴
Calcium	4130	610	2.3	mg/kg	1	02/01/17	02/02/17 ND	SW846 6010C ²	SW846 3050B ⁴
Chromium	16.1	1.2	0.14	mg/kg	1	02/01/17	02/02/17 NE	SW846 6010C ²	SW846 3050B ⁴
Cobalt	11.5	6.1	0.072	mg/kg	1	02/01/17	02/02/17 NE	SW846 6010C ²	SW846 3050B ⁴
Copper	48.8	3.1	0.27	mg/kg	1	02/01/17	02/02/17 ND	SW846 6010C ²	SW846 3050B ⁴
Iron	25500	61	0.97	mg/kg	1	02/01/17	02/02/17 ND	SW846 6010C ²	SW846 3050B ⁴
Lead	8.8	2.5	0.27	mg/kg	1	02/01/17	02/02/17 ND	SW846 6010C ²	SW846 3050B ⁴
Magnesium	3110	610	7.2	mg/kg	1	02/01/17	02/02/17 ND	SW846 6010C ²	SW846 3050B ⁴
Manganese	625	1.8	0.044	mg/kg	1	02/01/17	02/02/17 ND	SW846 6010C ²	SW846 3050B ⁴
Mercury	0.037	0.033	0.0053	mg/kg	1	02/01/17	02/01/17 JA	SW846 7471B ^l	SW846 7471B ³
Nickel	6.9	4.9	0.093	mg/kg	1	02/01/17	02/02/17 ND	SW846 6010C ²	SW846 3050B ⁴
Potassium	665 B	1200	23	mg/kg	1	02/01/17	02/02/17 ND	SW846 6010C ²	SW846 3050B ⁴
Selenium	0.75 B	2.5	0.57	mg/kg	1	02/01/17	02/02/17 ND	SW846 6010C ²	SW846 3050B ⁴
Silver	0.52 B	0.61	0.12	mg/kg	1	02/01/17	02/02/17 ND	SW846 6010C ²	SW846 3050B ⁴
Sodium	206 B	1200	4.8	mg/kg	1	02/01/17	02/02/17 ND	SW846 6010C ²	SW846 3050B ⁴
Thallium	1.1 B	1.2	0.49	mg/kg	Ī	02/01/17	02/02/17 ND	SW846 6010C ²	SW846 3050B ⁴
Vanadium	85.9	6.1	0.10	mg/kg	i	02/01/17	02/02/17 ND	SW846 6010C ²	SW846 3050B ⁴
Zinc	61.1	6.1	0.27	mg/kg	i	02/01/17	02/02/17 ND	SW846 6010C ²	SW846 3050B ⁴

(1) Instrument QC Batch: MA41277(2) Instrument QC Batch: MA41292(3) Prep QC Batch: MP98464(4) Prep QC Batch: MP98471



Report of Analysis

Page 1 of 3

Client Sample ID: B5SS-1

Lab Sample ID: JC36373-7 Matrix: SO - Soil

Method:

Project:

SW846 8270D SW846 3546

BMSMC, PR

Date Sampled: 01/25/17 Date Received: 01/27/17

Percent Solids: 94.1

File ID DF Prep Batch **Analytical Batch** Analyzed By Prep Date Run #1 6P34790.D I 02/08/17 AC 01/30/17 OP173 E6P1601

Run #2

Initial Weight Final Volume

Run #1 30.7 g

Run #2

1.0 ml

ABN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	69	17	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	170	21	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	170	30	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	170	62	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	170	130	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	170	37	ug/kg	
95-48-7	2-Methylphenol	ND	69	22	ug/kg	
	3&4-Methylphenol	ND	69	28	ug/kg	
88-75-5	2-Nitrophenol	ND	170	23	ug/kg	
100-02-7	4-Nitrophenol	ND	350	92	ug/kg	
87-86-5	Pentachlorophenol	ND	140	33	ug/kg	
108-95-2	Phenol	ND	69	18	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	170	23	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	170	26	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	170	21	ug/kg	
83-32-9	Acenaphthene	ND	35	12	ug/kg	
208-96-8	Acenaphthylene	ND	35	18	ug/kg	
98-86-2	Acetophenone	ND	170	7.4	ug/kg	
120-12-7	Anthracene	ND	35	21	ug/kg	
1912-24-9	Atrazine	ND	69	15	ug/kg	
56-55-3	Benzo(a)anthracene	ND	35	9.8	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	35	15	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	35	17	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	35	16	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	69	13	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	69	8.4	ug/kg	
92-52-4	1, 1'-Biphenyl	ND	69	4.7	ug/kg	
100-52-7	Benzaldehyde	39.3	170	8.6	ug/kg	J
91-58-7	2-Chloronaphthalene	ND	69	8.2	ug/kg	
106-47-8	4-Chloroaniline	ND	170	12	ug/kg	
86-74-8	Carbazole	ND	69	5.0	ug/kg	
105-60-2	Caprolactam	ND	69	14	ug/kg	



ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

Client Sample ID: B5SS-1 Lab Sample ID: JC36373-7 Matrix: SO - Soil

SW846 8270D SW846 3546

Method: Project: BMSMC, PR Date Sampled: 01/25/17 Date Received: 01/27/17 Percent Solids: 94.1

ABN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
218-01-9	Chrysene	ND	35	11	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	69	7.4	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	69	15	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	69	12	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	69	11	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	35	H	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	35	17	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	69	29	ug/kg	
123-91-1	1,4-Dioxane	ND	35	23	ug/kg	
132-64-9	Dibenzofuran	ND	69	14	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	69	5.6	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	69	8.6	ug/kg	
84-66-2	Diethyl phthalate	ND	69	7.4	ug/kg	
131-11-3	Dimethyl phthalate	66.3	69	6.2	ug/kg	J
117-81-7	bis(2-Ethylhexyl)phthalate	ND	69	8.1	ug/kg	
206-44-0	Fluoranthene	ND	35	15	ug/kg	
86-73-7	Fluorene	ND	35	16	ug/kg	
118-74-1	Hexachlorobenzene	ND	69	8.8	ug/kg	
87-68-3	Hexachlorobutadiene	ND	35	14	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	350	14	ug/kg	
67-72-1	Hexachloroethane	ND	170	17	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	35	16	ug/kg	
78-59-1	Isophorone	ND	69	7.4	ug/kg	
90-12-0	1-Methylnaphthalene	ND	69	6.8	ug/kg	
91-57-6	2-Methylnaphthalene	ND	69	7.8	ug/kg	
88-74-4	2-Nitroaniline	ND	170	8.2	ug/kg	
99-09-2	3-Nitroaniline	ND	170	8.7	ug/kg	
100-01-6	4-Nitroaniline	ND	170	9.0	ug/kg	
91-20-3	Naphthalene	ND	35	9.8	ug/kg	
98-95-3	Nitrobenzene	ND	69	13	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	69	10	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	170	13	ug/kg	POCATO
85-01-8	Phenanthrene	ND	35	12	ug/kg	337
129-00-0	Pyrene	ND	35	11	ug/kg	1 Street In
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	170	8.8	ug/kg	Name Admin
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limi	ts	[(= 1
	•					"MICO LIC
367-12-4	2-Fluorophenol	77%		23-1	15%	M/CO LICE
4165-62-2	Phenol-d5	77%		27-1	14%	O LIIO

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Page 3 of 3

Client Sample ID: B5SS-I

Lab Sample ID: JC36373-7 Matrix: SO - Soil

SW846 8270D SW846 3546

Project: BMSMC, PR

Date Sampled: 01/25/17 **Date Received:** 01/27/17

Percent Solids: 94.1

27<u>7</u>17 1

ABN Special List

Method:

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
118-79-6	2,4,6-Tribromophenol	84%		19-152%
4165-60-0	Nitrobenzene-d5	78%		26-134%
321-60-8	2-Fluorobiphenyl	77%		39-124%
1718-51-0	Terphenyl-d14	82%		36-134%



ND = Not detected

MDL = Method Detection Limit

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank

RL = Reporting Limit E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

SGS

Report of Analysis

Page 1 of I

Client Sample ID: B5SS-1

Lab Sample ID:

JC36373-7

Matrix:

SO - Soil

Method: Project:

SW846 8270D BY SIM SW846 3546

1

BMSMC, PR

Date Sampled: 01/25/17

Date Received: 01/27/17

Percent Solids: 94.1

File ID Analyzed

DF

By Prep Date SG 01/30/17

Prep Batch OP173A

Q

Analytical Batch

E4M3201

Run #1 Run #2

53-70-3

Initial Weight

4M69665.D

Final Volume

Run #1 30.7 g

1.0 ml

Run #2

CAS No. Compound 50-32-8 Benzo(a)pyrene

Dibenzo(a,h)anthracene

3.5 3.5

RL

Run# 2

0.84 ug/kg 0.81 ug/kg

Limits

Units

MDL

CAS No. Surrogate Recoveries

4165-60-0 Nitrobenzene-d5 321-60-8 2-Fluorobiphenyl 1718-51-0 Terphenyl-d14

Run#1 48%

54%

79%

Result

ND

ND

01/30/17

15-138% 12-148% 10-157%



ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Report of Analysis

Page 1 of 1

Client Sample ID: B5SS-1

Lab Sample ID:

JC36373-7

Matrix:

SO - Soil

Method: Project:

SW846-8015C (DAI)

BMSMC, PR

Date Sampled: 01/25/17

Date Received: 01/27/17

Percent Solids: 94.1

Ву File ID DF Analyzed **Prep Date** Prep Batch **Analytical Batch** Run #1 GH108428.D 01/30/17 XPL GGH5640 1 n/a n/a

Run #2

Initial Weight

Run #1 5.0 g

Run #2

Low Molecular Alcohol List

CAS No.	Compound	Result	RL	MDL	Units	Q
64-17-5	Ethanol	ND	110	73	ug/kg	
78-83-1	Isobutyl Alcohol	ND	110	62	ug/kg	
67-63-0	Isopropyl Alcohol	ND	110	61	ug/kg	
71-23-8	n-Propyl Alcohol	ND	110	43	ug/kg	
71-36-3	n-Butyl Alcohol	ND	110	58	ug/kg	
78-92-2	sec-Butyl Alcohol	ND	110	57	ug/kg	
67-56-1	Methanol	ND	210	51	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
111-27-3	Hexanol	96%		52-141%
111-27-3	Hexanol	85%		52-141%





MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Report of Analysis

By

KD

01/31/17

Page 1 of 1

Client Sample ID: B5SS-1

Lab Sample ID:

JC36373-7

Matrix: Method: SO - Soil

SW846 8081B SW846 3546

Analyzed

02/01/17

Project:

BMSMC, PR

Date Sampled: 01/25/17

Date Received: 01/27/17

G4G2017

OP215

Q

J

Percent Solids: 94.1

Prep Date Prep Batch **Analytical Batch**

Run #1 Run #2

Initial Weight

File ID

4G77556.D

Run #1 15.7 g 10.0 ml

Final Volume

DF

1

Run #2

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units
309-00-2	Aldrin	ND	0.68	0.32	ug/kg
319-84-6	alpha-BHC	ND	0.68	0.36	ug/kg
319-85-7	beta-BHC	ND	0.68	0.43	ug/kg
319-86-8	delta-BHC	ND	0.68	0.31	ug/kg
58-89-9	gamma-BHC (Lindane)	ND	0.68	0.30	ug/kg
5103-71-9	alpha-Chlordane	ND	0.68	0.32	ug/kg
5103-74-2	gamma-Chlordane a	0.31	0.68	0.30	ug/kg
60-57-1	Dieldrin	ND	0.68	0.34	ug/kg
72-54-8	4,4'-DDD	ND	0.68	0.43	ug/kg
72-55-9	4,4'-DDE	ND	0.68	0.35	ug/kg
50-29-3	4,4'-DDT	ND	0.68	0.40	ug/kg
72-20-8	Endrin	ND	0.68	0.32	ug/kg
1031-07-8	Endosulfan sulfate	ND	0.68	0.27	ug/kg
7421-93-4	Endrin aldehyde	ND	0.68	0.40	ug/kg
959-98-8	Endosulfan-I	ND	0.68	0.35	ug/kg
33213-65-9	Endosulfan-II	ND	0.68	0.35	ug/kg
76-44-8	Heptachlor	ND	0.68	0.33	ug/kg
1024-57-3	Heptachlor epoxide	ND	0.68	0.36	ug/kg
72-43-5	Methoxychlor	ND	1.4	0.34	ug/kg
53494-70-5	Endrin ketone	ND	0.68	0.52	ug/kg
8001-35-2	Toxaphene	ND	17	7.0	ug/kg

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	83%		24-136%
877-09-8	Tetrachloro-m-xylene	79%		24-136%
2051-24-3	Decachlorobiphenyl	103%		10-153%
2051-24-3	Decachlorobiphenyl	79%		10-153%

(a) More than 40 % RPD for detected concentrations between the two GC columns.



ND = Not detected

MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

Page 1 of 3

Client Sample ID: B5SS-2

Lab Sample ID: JC36373-8 Matrix: SO - Soil

Method:

SW846 8270D SW846 3546

Date Sampled: 01/25/17 Date Received: 01/27/17

Percent Solids: 95.6

Project: BMSMC, PR

File ID DF

Analyzed

By Prep Date AC 01/30/17

Prep Batch

Analytical Batch

Run #1 6P34791.D 1 02/08/17 OP173 E6P1601

Run #2

Final Volume Initial Weight

Run #1 30.4 g 1.0 ml

Run #2

ABN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	69	17	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	170	21	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	170	29	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	170	61	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	170	130	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	170	37	ug/kg	
95-48-7	2-Methylphenol	ND	69	22	ug/kg	
	3&4-Methylphenol	ND	69	28	ug/kg	
88-75-5	2-Nitrophenol	ND	170	23	ug/kg	
100-02-7	4-Nitrophenol	ND	340	92	ug/kg	
87-86-5	Pentachlorophenol	ND	140	32	ug/kg	
108-95-2	Phenol	ND	69	18	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	170	23	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	170	26	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	170	21	ug/kg	
83-32-9	Acenaphthene	ND	34	12	ug/kg	
208-96-8	Acenaphthylene	ND	34	17	ug/kg	
98-86-2	Acetophenone	ND	170	7.4	ug/kg	
120-12-7	Anthracene	ND	34	21	ug/kg	
1912-24-9	Atrazine	ND	69	15	ug/kg	
56-55-3	Benzo(a)anthracene	ND	34	9.7	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	34	15	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	34	17	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	34	16	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	69	13	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	69	8.4	ug/kg	
92-52-4	1, 1'-Biphenyl	ND	69	4.7	ug/kg	
100-52-7	Benzaldehyde	18.2	170	8.5	ug/kg	J
91-58-7	2-Chloronaphthalene	ND	69	8.2	ug/kg	
106-47-8	4-Chloroaniline	ND	170	12	ug/kg	
86-74-8	Carbazole	ND	69	5.0	ug/kg	
105-60-2	Caprolactam	ND	69	14	ug/kg	



ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Page 2 of 3

Client Sample ID: B5SS-2

Lab Sample ID: JC36373-8 Matrix: SO - Soil

Method: SW846 8270D SW846 3546

Project: BMSMC, PR Date Sampled: 01/25/17 Date Received: 01/27/17

Percent Solids: 95.6

Q

ABN Special List

CAS No. Compound		Result	RL	MDL	Units
218-01-9	Chrysene	ND	34	11	ug/kg
111-91-1	bis(2-Chloroethoxy)methane	ND	69	7.4	ug/kg
111-44-4	bis(2-Chloroethyl)ether	ND	69	15	ug/kg
108-60-1	bis(2-Chloroisopropyl)ether	ND	69	12	ug/kg
7005-72-3	4-Chlorophenyl phenyl ether	ND	69	11	ug/kg
121-14-2	2,4-Dinitrotoluene	ND	34	11	ug/kg
606-20-2	2,6-Dinitrotoluene	ND	34	17	ug/kg
91-94-1	3,3'-Dichlorobenzidine	ND	69	29	ug/kg
123-91-1	1,4-Dioxane	ND	34	23	ug/kg
132-64-9	Dibenzofuran	ND	69	14	ug/kg
84-74-2	Di-n-butyl phthalate	ND	69	5.6	ug/kg
117-84-0	Di-n-octyl phthalate	ND	69	8.6	ug/kg
84-66-2	Diethyl phthalate	ND	69	7.3	ug/kg
131-11-3	Dimethyl phthalate	ND	69	6.1	ug/kg
117-81-7	bis(2-Ethylhexyl)phthalate	ND	69	8.1	ug/kg
206-44-0	Fluoranthene	ND	34	15	ug/kg
86-73-7	Fluorene	ND	34	16	ug/kg
118-74-1	Hexachlorobenzene	ND	69	8.7	ug/kg
87-68-3	Hexachlorobutadiene	ND	34	14	ug/kg
77-47-4	Hexachlorocyclopentadiene	ND	340	14	ug/kg
67-72-1	Hexachloroethane	ND	170	17	ug/kg
193-39-5	Indeno(1,2,3-cd)pyrene	ND	34	16	ug/kg
78-59-1	Isophorone	ND	69	7.4	ug/kg
90-12-0	1-Methylnaphthalene	ND	69	6.7	ug/kg
91-57-6	2-Methylnaphthalene	ND	69	7.8	ug/kg
88-74-4	2-Nitroaniline	ND	170	8.1	ug/kg
99-09-2	3-Nitroaniline	ND	170	8.6	ug/kg
100-01-6	4-Nitroaniline	ND	170	8.9	ug/kg
91-20-3	Naphthalene	ND	34	9.7	ug/kg
98-95-3	Nitrobenzene	ND	69	13	ug/kg
621-64-7	N-Nitroso-di-n-propylamine	ND	69	9.9	ug/kg
86-30-6	N-Nitrosodiphenylamine	ND	170	13	ug/kg
85-01-8	Phenanthrene	ND	34	12	ug/kg
129-00-0	Pyrene	ND	34	11	ug/kg
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	170	8.7	ug/kg
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limi	ts
367-12-4	2-Fluorophenol	77%		23-1	
4165-62-2	Phenol-d5	77%		27-11	14%

luel Infante Mendez 10 = 1888

ND = Not detected

MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Page 3 of 3

Client Sample ID: B5SS-2

Lab Sample ID: JC36373-8 Matrix: SO - Soil

Method: SW846 8270D SW846 3546

BMSMC, PR

Date Sampled: 01/25/17 Date Received: 01/27/17

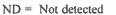
Percent Solids: 95.6

ABN Special List

Project:

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
118-79-6	2,4,6-Tribromophenol	88%		19-152%
4165-60-0	Nitrobenzene-d5	77%		26-134%
321-60-8	2-Fluorobiphenyl	78%		39-124%
1718-51-0	Terphenyl-d14	81%		36-134%





MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Report of Analysis

Page 1 of 1

Client Sample ID: B5SS-2 Lab Sample ID: JC36373-8

Matrix:

SO - Soil

Method: Project:

SW846 8270D BY SIM SW846 3546

BMSMC, PR

Date Sampled: 01/25/17

Q

Date Received: 01/27/17

Percent Solids: 95.6

File ID DF Analyzed By Prep Date **Prep Batch Analytical Batch** Run #1 4M69666.D 01/30/17 SG 01/30/17 **OP173A** E4M3201

Run #2

Initial Weight **Final Volume** 1.0 ml 30.4 g

Run #1 Run #2

CAS No. Compound Result RL MDL Units 50-32-8 Benzo(a)pyrene ND 3.4 0.84 ug/kg 53-70-3 Dibenzo(a, h)anthracene ND 3.4 0.80 ug/kg

CAS No. Surrogate Recoveries Run# 1 Run# 2 Limits 4165-60-0 Nitrobenzene-d5 54% 15-138% 321-60-8 2-Fluorobiphenyl 62% 12-148% 1718-51-0 Terphenyl-d14 88% 10-157%



ND = Not detected

MDL = Method Detection Limit

J = Indicates an estimated value B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

RL = Reporting Limit

E = Indicates value exceeds calibration range



Report of Analysis

Page 1 of 1

Client Sample ID: B5SS-2

Lab Sample ID: JC36373-8 Matrix: SO - Soil

Method: Project:

SW846-8015C (DAI) BMSMC, PR

Date Sampled: 01/25/17 Date Received: 01/27/17

Percent Solids: 95.6

File ID DF By **Prep Batch Analytical Batch** Analyzed **Prep Date** Run #1 GH108429.D 1 01/30/17 XPL n/a n/a GGH5640

Run #2

Initial Weight

Run #1 5.1 g

Run #2

Low Molecular Alcohol List

CAS No.	Compound	Result	RL	MDL	Units	Q
64-17-5 78-83-1	Ethanol Isobutyl Alcohol	ND ND	100	71 60	ug/kg ug/kg	
67-63-0	Isopropyl Alcohol	ND	100	59	ug/kg	
71-23-8 71-36-3	n-Propyl Alcohol n-Butyl Alcohol	ND ND	001	41 56	ug/kg ug/kg	
78-92-2 67-56-1	sec-Butyl Alcohol Methanol	ND ND	100 210	55 49	ug/kg ug/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim		
111-27-3	Hexanol	125%		57-1	41%	
111-27-3	Hexanol	109%			41%	



ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

58 of 1882

Report of Analysis

Page 1 of I

Client Sample ID: B5SS-2

Lab Sample ID:

JC36373-8

Matrix: Method: SO - Soil

SW846 8081B SW846 3546

Date Sampled: 01/25/17 Date Received: 01/27/17

Percent Solids: 95.6

Project:

BMSMC, PR

File ID

DF 1

Analyzed 02/01/17

Ву KD

Prep Date 01/31/17

Prep Batch OP215

Q

Analytical Batch G4G2017

Run #1 Run #2

Initial Weight

4G77557.D

Final Volume

Run #1 Run #2

15.5 g

10.0 ml

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	(
309-00-2	Aldrin	ND	0.67	0.32	ug/kg	
319-84-6	alpha-BHC	ND	0.67	0.36	ug/kg	
319-85-7	beta-BHC	ND	0.67	0.42	ug/kg	
319-86-8	delta-BHC	ND	0.67	0.31	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	0.67	0.30	ug/kg	
5103-71-9	alpha-Chlordane	ND	0.67	0.32	ug/kg	
5103-74-2	gamma-Chlordane	ND	0.67	0.30	ug/kg	
60-57-1	Dieldrin	ND	0.67	0.34	ug/kg	
72-54-8	4,4'-DDD	2.0	0.67	0.43	ug/kg	
72-55-9	4,4'-DDE	ND	0.67	0.35	ug/kg	
50-29-3	4,4' <i>-</i> DDT	ND	0.67	0.40	ug/kg	
72-20-8	Endrin	ND	0.67	0.32	ug/kg	
1031-07-8	Endosulfan sulfate	ND	0.67	0.27	ug/kg	
7421-93-4	Endrin aldehyde	ND	0.67	0.40	ug/kg	
959-98-8	Endosulfan-I	ND	0.67	0.35	ug/kg	
33213-65-9	Endosulfan-II	ND	0.67	0.35	ug/kg	
76-44-8	Heptachlor	ND	0.67	0.33	ug/kg	
1024-57-3	Heptachlor epoxide	ND	0.67	0.36	ug/kg	
72-43-5	Methoxychlor	ND	1.3	0.34	ug/kg	
53494-70-5	Endrin ketone	ND	0.67	0.52	ug/kg	
8001-35-2	Toxaphene	ND	17	7.0	ug/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
877-09-8	Tetrachloro-m-xylene	85%		24-1	36%	
877-09-8	Tetrachloro-m-xylene	79%		24-1	36%	



ND = Not detected

2051-24-3

2051-24-3

MDL = Method Detection Limit

111%

76%

J = Indicates an estimated value

10-153%

10-153%

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

Decachlorobiphenyl

Decachlorobiphenyl

Report of Analysis

By

AC

Prep Date

01/30/17

Page 1 of 3

Client Sample ID: EB-012517

Lab Sample ID: JC36373-9

File ID

900 ml

2P66722.D

Matrix: Method:

Project:

AQ - Equipment Blank

SW846 8270D SW846 3510C

Date Sampled: 01/25/17 Date Received: 01/27/17

Percent Solids: n/a

DF

1

BMSMC, PR

Analytical Batch Prep Batch OP192 E2P2930

Run #1 Run #2

Initial Volume

Final Volume

Analyzed

01/31/17

1.0 ml

Run #1 Run #2

ABN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	5.6	0.91	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	5.6	0.99	ug/l	
120-83-2	2,4-Dichlorophenol	ND	2.2	1.4	ug/l	
105-67-9	2,4-Dimethylphenol	ND	5.6	2.7	ug/l	
51-28-5	2,4-Dinitrophenol	ND	11	1.7	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	5.6	1.4	ug/l	
95-48-7	2-Methylphenol	ND	2.2	0.99	ug/l	
	3&4-Methylphenol	ND	2.2	0.98	ug/l	
88-75-5	2-Nitrophenol	ND	5.6	1.1	ug/l	
100-02-7	4-Nitrophenol	ND	11	1.3	ug/l	
87-86-5	Pentachlorophenol	ND	4.4	1.5	ug/l	
108-95-2	Phenol	ND	2.2	0.44	ug/I	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	5.6	1.6	ug/i	
95-95-4	2,4,5-Trichlorophenol	ND	5.6	1.5	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.6	1.0	ug/l	
83-32-9	Acenaphthene	ND	1.1	0.21	ug/l	
208-96-8	Acenaphthylene	ND	1.1	0.15	ug/l	
98-86-2	Acetophenone	ND	2.2	0.23	ug/l	
120-12-7	Anthracene	ND	1.1	0.23	ug/l	
1912-24-9	Atrazine	ND	2.2	0.50	ug/l	
100-52-7	Benzaldehyde	ND	5.6	0.32	ug/l	
56-55-3	Benzo(a)anthracene	ND	1.1	0.23	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	1.1	0.23	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	1.1	0.38	ug/l	-antina-
207-08-9	Benzo(k)fluoranthene	ND	1.1	0.23	ug/l	Maraga
101-55-3	4-Bromophenyl phenyl ether	ND	2.2	0.45	ug/l	330
85-68-7	Butyl benzyl phthalate	ND	2.2	0.51	ug/l	/ duel Infante
92-52-4	1, 1'-Biphenyl	ND	1.1	0.24	ug/l	Méndez
91-58-7	2-Chloronaphthalene	ND	2.2	0.26	սք/1	IC = 1888
106-47-8	4-Chloroaniline	ND	5.6	0.38	ug/l	
86-74-8	Carbazole	ND	1.1	0.25	ug/l	Till San
105-60-2	Caprolactam	ND	2.2	0.72	ug/l	MICO LICENCY

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Client Sample ID: EB-012517

Lab Sample ID: JC36373-9
Matrix: AQ - Equipment Blank

Method: SW846 8270D SW846 3510C

Project: BMSMC, PR

Date Sampled: 01/25/17 **Date Received:** 01/27/17

Percent Solids: n/a

ABN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
218-01-9	Chrysene	ND	1.1	0.20	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	2.2	0.31	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	2.2	0.28	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	2.2	0.45	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	2.2	0.41	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	1.1	0.61	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	1.1	0.53	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	2.2	0.56	ug/l	
123-91-1	1,4-Dioxane	ND	1.1	0.73	ug/l	
132-64-9	Dibenzofuran	ND	5.6	0.24	ug/l	
84-74-2	Di-n-butyl phthalate	ND	2.2	0.55	ug/l	
117-84-0	Di-n-octyl phthalate	ND	2.2	0.26	ug/l	
84-66-2	Diethyl phthalate	ND	2.2	0.29	ug/l	
131-11-3	Dimethyl phthalate	ND	2.2	0.24	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.2	1.8	ug/l	
206-44-0	Fluoranthene	ND	1.1	0.19	ug/l	
86-73-7	Fluorene	ND	1.1	0.19	ug/l	
118-74-1	Hexachlorobenzene	ND	1.1	0.36	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.1	0.55	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	11	3.1	ug/l	
67-72-1	Hexachloroethane	ND	2.2	0.43	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	1.1	0.37	ug/l	
78-59-1	Isophorone	ND	2.2	0.31	ug/l	
90-12-0	1-Methylnaphthalene	ND	1.1	0.29	ug/I	
91-57-6	2-Methylnaphthalene	ND	1.1	0.23	ug/l	
88-74-4	2-Nitroaniline	ND	5.6	0.31	ug/l	
99-09-2	3-Nitroaniline	ND	5.6	0.43	ug/l	
100-01-6	4-Nitroaniline	ND	5.6	0.49	ug/l	
91-20-3	Naphthalene	ND	1.1	0.26	ug/l	
98-95-3	Nitrobenzene	ND	2.2	0.71	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	2.2	0.53	ug/l	OF NOCWOOF
86-30-6	N-Nitrosodiphenylamine	ND	5.6	0.25	ug/l	198
85-01-8	Phenanthrene	ND	1.1	0.19	ug/l	/ 3
129-00-0	Pyrene	ND	1.1	0.24	ug/l	fuel Infante
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	2.2	0.41	ug/l	Méndez 10 = 1888
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	MCO LICENCIA
367-12-4	2-Fluorophenol	36%		10-1	10%	COTICEMO
4165-62-2	Phenol-d5	28%		10-1		-



MDL = Method Detection Limit

RL = Reporting Limit

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



E = Indicates value exceeds calibration range

Client Sample ID: EB-012517 Lab Sample ID: JC36373-9

Matrix: Method:

AQ - Equipment Blank

SW846 8270D SW846 3510C BMSMC, PR

Date Sampled: 01/25/17 Date Received: 01/27/17

Percent Solids: n/a

ABN Special List

Project:

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
118-79-6	2,4,6-Tribromophenol	82%		36-151%
4165-60-0	Nitrobenzene-d5	82%		34-128%
321-60-8	2-Fluorobiphenyl	89%		38-119%
1718-51-0	Terphenyl-d14	86%		26-129%



E = Indicates value exceeds calibration range

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Page 1 of 1

Client Sample ID: EB-012517 Lab Sample ID: JC36373-9

Matrix: Method:

AQ - Equipment Blank SW846 8270D BY SIM SW846 3510C **Date Sampled:** 01/25/17 Date Received: 01/27/17

Percent Solids: n/a

Project: BMSMC, PR

File ID DF Analyzed By Prep Date **Prep Batch Analytical Batch** Run #1 4M69688.D 02/02/17 SG 01/30/17 OP192A E4M3203

Run #2

Initial Volume **Final Volume** Run #1 900 ml 1.0 ml

Run #2

CAS No.	Compound	Result	RL	MDL	Units	Q
50-32-8 53-70-3	Benzo(a)pyrene Dibenzo(a,h)anthracene	ND ND	0.056 0.11	0.037 0.040	ug/l ug/l	
				Limits		
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
CAS No. 4165-60-0	Surrogate Recoveries Nitrobenzene-d5	Run# 1 58%	Run# 2	Lim 24-1		
			Run# 2	24-1		



ND = Not detected

MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

Report of Analysis

Page 1 of 1

Client Sample ID: EB-012517

Lab Sample ID: JC36373-9

Matrix: Method: Project:

AQ - Equipment Blank SW846-8015C (DAI) BMSMC, PR

Date Sampled: 01/25/17 Date Received: 01/27/17

Percent Solids: n/a

Q

File ID DF Analyzed By **Prep Date Prep Batch Analytical Batch** Run #1 GH108411.D 1 01/30/17 XPL n/a n/a GGH5639

Run #2

Low Molecular Alcohol List

CAS No.	Compound	Result	RL	MDL	Units
64-17-5	Ethanol	ND	100	<i>ee</i>	/1
				55	ug/l
78-83-1	Isobutyl Alcohol	ND	100	36	ug/l
67-63-0	Isopropyl Alcohol	ND	100	68	ug/l
71-23-8	n-Propyl Alcohol	ND	100	43	ug/l
71-36-3	n-Butyl Alcohol	ND	100	87	ug/l
78-92-2	sec-Butyl Alcohol	ND	100	66	ug/l
67-56-1	Methanol	ND	200	71	ug/l
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its
111-27-3	Hexanol	119%		56-1	45%
111-27-3 Hexanol		108%		-	45%



ND Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Report of Analysis

Page 1 of 1

Client Sample ID: EB-012517

Lab Sample ID: JC36373-9

Matrix: AQ - Equipment Blank

Method: SW846 8081B SW846 3510C

Project: BMSMC, PR Date Sampled: 01/25/17 Date Received: 01/27/17

Percent Solids: n/a

DF File ID Analyzed By Prep Date Prep Batch **Analytical Batch** G8G79 Run #1 8G2633.D 1 02/03/17 KD 02/01/17 **OP233**

Run #2

Initial Volume Final Volume

Run #1 930 ml 10.0 ml

Run #2

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.011	0.0065	ug/l	
319-84-6	alpha-BHC	ND	0.011	0.0065	ug/l	
319-85-7	beta-BHC	ND	0.011	0.0061	ug/l	
319-86-8	delta-BHC	ND	0.011	0.0049	ug/l	
58-89-9	gamma-BHC (Lindane)	ND	0.011	0.0030	ug/l	
5103-71-9	alpha-Chlordane	ND	0.011	0.0050	ug/l	
5103-74-2	gamma-Chlordane	ND	0.011	0.0049	ug/l	
60-57-1	Dieldrin	ND	0.011	0.0039	ug/l	
72-54-8	4,4'-DDD	ND	0.011	0.0041	ug/l	
72-55-9	4,4'-DDE	ND	0.011	0.0066	ug/l	
50-29-3	4,4'-DDT	ND	0.011	0.0053	ug/l	
72-20-8	Endrin	ND	0.011	0.0054	ug/I	
1031-07-8	Endosulfan sulfate	ND	0.011	0.0056	ug/l	
7421-93-4	Endrin aldehyde	ND	0.011	0.0055	ug/l	
53494-70-5	Endrin ketone	ND	0.011	0.0055	ug/l	
959-98-8	Endosulfan-l	ND	0.011	0.0053	ug/l	
33213-65-9	Endosulfan-II	ND	0.011	0.0046	ug/l	
76-44-8	Heptachlor	ND	0.011	0.0041	ug/l	
1024-57-3	Heptachlor epoxide	ND	0.011	0.0070	ug/l	
72-43-5	Methoxychlor	ND	0.022	0.0061	ug/l	COCHADO DO
8001-35-2	Toxaphene	ND	0.27	0.20	ug/l	all have the fifth
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limi	ts	tuel Infante Méndez 1(= 1888
877-09-8	Tetrachloro-m-xylene	81%		13-1:	53%	1(= 1888
877-09-8	Tetrachloro-m-xylene	83%		13-13	53%	10/
2051-24-3	Decachlorobiphenyl	43%		10-13	38%	Man wells
2051-24-3	Decachlorobiphenyl	38%		10-13	38%	MICO LICENCIADO



MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Client Sample ID: EB-012517 Lab Sample ID: JC36373-9

Matrix: AQ - Equipment Blank

Date Sampled: 01/25/17
Date Received: 01/27/17
Percent Solids: n/a

Project: BMSMC, PR

Total Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	Ву	Method	Prep Method
Aluminum	35.2 B	200	21	ug/l	1	01/31/17	02/01/17	DE	SW846 6010C ²	SW846 3010A ³
Antimony	3.3 U	6.0	3.3	ug/l	1	01/31/17	02/01/17	DE	SW846 6010C ²	SW846 3010A ³
Arsenic	2.2 U	3.0	2.2	ug/l	1	01/31/17	02/01/17	DE	SW846 6010C ²	SW846 3010A ³
Barium	1.4 B	200	0.44	ug/l	1	01/31/17	02/01/17	DE	SW846 6010C ²	SW846 3010A ³
Beryllium	0.25 U	1.0	0.25	ug/l	I	01/31/17	02/01/17	DE	SW846 6010C ²	SW846 3010A ³
Cadmium	0.40 U	3.0	0.40	ug/l	1	01/31/17	02/01/17	DE	SW846 6010C ²	SW846 3010A ³
Calcium	283 B	5000	33	ug/l	1	01/31/17	02/01/17	DE	SW846 6010C ²	SW846 3010A ³
Chromium	0.81 U	10	0.81	ug/l	1	01/31/17	02/01/17	DE	SW846 6010C ²	SW846 3010A ³
Cobalt	0.69 U	50	0.69	ug/l	1	01/31/17	02/01/17	DE	SW846 6010C ²	SW846 3010A ³
Copper	2.4 U	10	2.4	ug/l	1	01/31/17	02/01/17	DE	SW846 6010C ²	SW846 3010A ³
Iron	12 U	100	12	ug/l	1	01/31/17	02/01/17	DE	SW846 6010C ²	SW846 3010A ³
Lead	2.3 U	3.0	2.3	ug/l	1	01/31/17	02/01/17	DE	SW846 6010C ²	SW846 3010A ³
Magnesium	85 U	5000	85	ug/l	1	01/31/17	02/01/17	DE	SW846 6010C ²	SW846 3010A ³
Manganese	8.8 B	15	0.39	ug/l	1	01/31/17	02/01/17	DE	SW846 6010C ²	SW846 3010A ³
Mercury	0.056 B	0.20	0.047	ug/l	1	02/01/17	02/01/17	JPM	SW846 7470A ¹	SW846 7470A ⁴
Nickel	0.76 U	10	0.76	սք/1	1	01/31/17	02/01/17	DE	SW846 6010C ²	SW846 3010A ³
Potassium	120 U	10000	120	ug/l	1	01/31/17	02/01/17	DE	SW846 6010C ²	SW846 3010A ³
Selenium	4.1 U	10	4.1	ug/l	1	01/31/17	02/01/17	DE	SW846 6010C ²	SW846 3010A ³
Silver	0.88 U	10	0.88	ug/l	1	01/31/17	02/01/17	DE	SW846 6010C ²	SW846 3010A ³
Sodium	208 B	10000	24	ug/l	1	01/31/17	02/01/17	DE	SW846 6010C ²	SW846 3010A ³
Thallium	1.9 U	10	1.9	ug/I	1	01/31/17	02/01/17	DE	SW846 6010C ²	SW846 3010A ³
Vanadium	0.66 U	50	0.66	ug/l	1	01/31/17	02/01/17	DE	SW846 6010C ²	SW846 3010A ³
Zinc	1.3 U	20	1.3	ug/l	1	01/31/17	02/01/17	DE	SW846 6010C ²	SW846 3010A ³

(1) Instrument QC Batch: MA41282(2) Instrument QC Batch: MA41283(3) Prep QC Batch: MP98461(4) Prep QC Batch: MP98472



Report of Analysis

By

AC

Page 1 of 3

Client Sample ID: FB-012517

Lab Sample ID: JC36373-10

File ID

2P66723.D

Matrix:

AQ - Field Blank Soil

DF

Analyzed

01/31/17

Date Sampled: 01/25/17 Date Received: 01/27/17

Method:

SW846 8270D SW846 3510C

Percent Solids: n/a

Project:

BMSMC, PR

Prep Date 01/30/17

Prep Batch OP192

Q

Analytical Batch E2P2930

Run #1 Run #2

> Initial Volume **Final Volume**

910 ml Run #1

1.0 ml

Run #2

ABN Special List

CAS No.	Compound	Result	RL	MDL	Units
95-57-8	2-Chlorophenol	ND	5.5	0.90	ug/l
59-50-7	4-Chloro-3-methyl phenol	ND	5.5	0.98	ug/l
120-83-2	2,4-Dichlorophenol	ND	2.2	1.4	ug/l
105-67-9	2,4-Dimethylphenol	ND	5.5	2.7	ug/l
51-28-5	2,4-Dinitrophenol	ND	11	1.7	ug/l
534-52-1	4,6-Dinitro-o-cresol	ND	5.5	1.4	ug/l
95-48-7	2-Methylphenol	ND	2.2	0.98	ug/l
	3&4-Methylphenol	ND	2.2	0.97	ug/l
88-75-5	2-Nitrophenol	ND	5.5	1.1	ug/1
100-02-7	4-Nitrophenol	ND	- 11	1.3	ug/l
87-86-5	Pentachlorophenol	ND	4.4	1.5	ug/l
108-95-2	Phenol	ND	2.2	0.43	ug/l
58-90-2	2,3,4,6-Tetrachlorophenol	ND	5.5	1.6	ug/l
95-95-4	2,4,5-Trichlorophenol	ND	5.5	1.5	ug/l
88-06-2	2,4,6-Trichlorophenol	ND	5.5	1.0	ug/l
83-32-9	Acenaphthene	ND	1.1	0.21	ug/l
208-96-8	Acenaphthylene	ND	1.1	0.15	ug/l
98-86-2	Acetophenone	ND	2.2	0.23	ug/l
120-12-7	Anthracene	ND	1.1	0.23	ug/l
1912-24-9	Atrazine	ND	2.2	0.49	ug/l
100-52-7	Benzaldehyde	ND	5.5	0.32	ug/l
56-55-3	Benzo(a)anthracene	ND	1.1	0.22	ug/l
205-99-2	Benzo(b)fluoranthene	ND	1.1	0.23	ug/l
191-24-2	Benzo(g,h,i)perylene	ND	1.1	0.37	ug/l
207-08-9	Benzo(k)fluoranthene	ND	1.1	0.23	ug/l
101-55-3	4-Bromophenyl phenyl ether	ND	2.2	0.44	ug/l
85-68-7	Butyl benzyl phthalate	ND	2.2	0.50	ug/l
92-52-4	1, 1'-Biphenyl	ND	1.1	0.23	ug/l
91-58-7	2-Chloronaphthalene	ND	2.2	0.26	սք/Լ
106-47-8	4-Chloroaniline	ND	5.5	0.37	ug/l
86-74-8	Carbazole	ND	1.1	0.25	ug/l
105-60-2	Caprolactam	ND	2.2	0.71	ug/l



ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Page 2 of 3

Client Sample ID: FB-012517

Lab Sample ID: JC36373-10

Date Sampled: 01/25/17 Matrix: AQ - Field Blank Soil Date Received: 01/27/17 Method: SW846 8270D SW846 3510C Percent Solids: n/a

Project: BMSMC, PR

ABN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
218-01-9	Chrysene	ND	1.1	0.19	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	2.2	0.31	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	2.2	0.27	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	2.2	0.44	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	2.2	0.40	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	1.1	0.61	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	1.1	0.52	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	2.2	0.56	ug/l	
123-91-1	1,4-Dioxane	ND	1.1	0.72	ug/l	
132-64-9	Dibenzofuran	ND	5.5	0.24	ug/l	
84-74-2	Di-n-butyl phthalate	ND	2.2	0.55	ug/l	
117-84-0	Di-n-octyl phthalate	ND	2.2	0.26	ug/l	
84-66-2	Diethyl phthalate	ND	2.2	0.29	ug/l	
131-11-3	Dimethyl phthalate	ND	2.2	0.24	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.2	1.8	ug/l	
206-44-0	Fluoranthene	ND	1.1	0.19	ug/l	
86-73-7	Fluorene	ND	1.1	0.19	ug/l	
118-74-1	Hexachlorobenzene	ND	1.1	0.36	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.1	0.54	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	11	3.1	ug/l	
67-72-1	Hexachloroethane	ND	2.2	0.43	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	1.1	0.36	ug/l	
78-59-1	Isophorone	ND	2.2	0.30	ug/l	
90-12-0	1-Methylnaphthalene	ND	1.1	0.29	ug/l	
91-57-6	2-Methylnaphthalene	ND	1.1	0.23	ug/l	
88-74-4	2-Nitroaniline	ND	5.5	0.30	սջ/1	
99-09-2	3-Nitroaniline	ND	5.5	0.43	ug/l	
100-01-6	4-Nitroaniline	ND	5.5	0.48	ug/l	
91-20-3	Naphthalene	ND	1.1	0.25	ug/l	
98-95-3	Nitrobenzene	ND	2.2	0.71	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	2.2	0.53	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.5	0.24	ug/l	SOCIADO DE
85-01-8	Phenanthrene	ND	1.1	0.19	ug/l	age.
129-00-0	Pyrene	ND	1.1	0.24	ug/!	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	2.2	0.41	ug/l	tael Infante 2
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limi	ts	tael Infante Méndez IC = 1888
						CO LICENCINO
367-12-4	2-Fluorophenol	26%		10-1		COLICENCIA
4165-62-2	Phenol-d5	20%		10-1	10%	LICE

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Page 3 of 3

Report of Analysis

Client Sample ID: FB-012517 Lab Sample ID:

JC36373-10

Matrix:

AQ - Field Blank Soil

Method: Project:

SW846 8270D SW846 3510C BMSMC, PR

Date Sampled: 01/25/17 Date Received: 01/27/17

Percent Solids: n/a

ABN Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
118-79-6	2,4,6-Tribromophenol	72%		36-151%
4165-60-0	Nitrobenzene-d5	74%		34-128%
321-60-8	2-Fluorobiphenyl	79%		38-119%
1718-51-0	Terphenyl-d14	66%		26-129%







RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

Report of Analysis

By

SG

RL

0.11

Page 1 of 1

	Client Sample ID:
ı	Lab Sample ID:

FB-012517

Matrix:

JC36373-10

Method:

Π.

AQ - Field Blank Soil

DF

1

SW846 8270D BY SIM SW846 3510C

Date Sampled: Date Received: 01/27/17

01/25/17

Percent Solids: n/a

OP192A

Q

Project:

BMSMC, PR

Prep Batch

Analytical Batch E4M3203

Run #1 Run #2

Initial Volume

Compound

Benzo(a)pyrene

Dibenzo(a,h)anthracene

4M69689.D

File ID

910 ml

Final Volume

1.0 ml

Run #1 Run #2

CAS No.

50-32-8

53-70-3

Result

Analyzed

02/02/17

MDL 0.055

Units

ug/l

0.037 ug/l

0.040

Prep Date

01/30/17

CAS No. Surrogate Recoveries

Run# 1

ND

ND

Run# 2 Limits

24-125% 19-127%

10-119%

4165-60-0 Nitrobenzene-d5 321-60-8 2-Fluorobiphenyl 1718-51-0 Terphenyl-d14

54% 54% 65%

daef Infante Méndez IC # 1888

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit E = Indicates value exceeds calibration range J = Indicates an estimated value

B = Indicates analyte found in associated method blank

Report of Analysis

Page 1 of 1

Client Sample ID: FB-012517

Lab Sample ID:

JC36373-10

Matrix: Method: AQ - Field Blank Soil SW846-8015C (DAI)

Date Sampled: 01/25/17 Date Received: 01/27/17

Project:

BMSMC, PR

Percent Solids: n/a

Run #1

File ID GH108412.D DF Analyzed 01/30/17 1

By XPL **Prep Date** n/a

Prep Batch n/a

Q

Analytical Batch GGH5639

Run #2

Low Molecular Alcohol List

CAS No.	Compound	Result	RL	MDL	Units	
64-17-5	Ethanol	ND	100	55	ug/l	
78-83-1	Isobutyl Alcohol	ND	100	36	ug/l	
67-63-0	Isopropyl Alcohol	ND	100	68	ug/l	
71-23-8	n-Propyl Alcohol	ND	100	43	ug/l	
71-36-3	n-Butyl Alcohol	ND	100	87	ug/l	
78-92-2	sec-Butyl Alcohol	ND	100	66	ug/l	
67-56-1	Methanol	ND	200	71	ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
111-27-3	Hexanol	117%		56-1	45%	
111-27-3	Hexanol	97%		56-1	45%	



ND Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Report of Analysis

Page 1 of 1

Client Sample ID: FB-012517

Lab Sample ID:

JC36373-10

Matrix:

AQ - Field Blank Soil

Method:

SW846 8081B SW846 3510C

Date Sampled: 01/25/17

Date Received: 01/27/17

Percent Solids: n/a

Project:

BMSMC, PR

File ID DF

Prep Date

Prep Batch **OP233**

Q

Analytical Batch G8G79

Run #1 8G2634.D 1 02/03/17 KD 02/01/17

Analyzed

 $\mathbf{B}\mathbf{y}$

Run #2

Initial Volume

920 ml

Final Volume

Run #1 Run #2 10.0 ml

Pesticide TCL List

O 4 O 31	A 1	

CAS No.	Compound	Result	RL	MDL	Units
309-00-2	Aldrin	ND	0.011	0.0066	ug/l
319-84-6	alpha-BHC	ND	0.011	0.0065	ug/l
319-85-7	beta-BHC	ND	0.011	0.0062	ug/l
319-86-8	delta-BHC	ND	0.011	0.0050	ug/l
58-89-9	gamma-BHC (Lindane)	ND	0.011	0.0030	ug/l
5103-71-9	alpha-Chlordane	ND	0.011	0.0050	ug/l
5103-74-2	gamma-Chlordane	ND	0.011	0.0050	ug/l
60-57-1	Dieldrin	ND	0.011	0.0039	ug/l
72-54-8	4,4'-DDD	ND	0.011	0.0041	ug/l
72-55-9	4,4'-DDE	ND	0.011	0.0067	ug/l
50-29-3	4,4'-DDT	ND	0.011	0.0054	ug/l
72-20-8	Endrin	ND	0.011	0.0055	ug/l
1031-07-8	Endosulfan sulfate	ND	0.011	0.0057	ug/l
7421-93-4	Endrin aldehyde	ND	0.011	0.0056	ug/l
53494-70-5	Endrin ketone	ND	0.011	0.0055	ug/l
959-98-8	Endosulfan-I	ND	0.011	0.0054	ug/l
33213-65-9	Endosulfan-II	ND	0.011	0.0047	ug/l
76-44-8	Heptachlor	ND	0.011	0.0041	ug/l
1024-57-3	Heptachlor epoxide	ND	0.011	0.0071	ug/l
72-43-5	Methoxychlor	ND	0.022	0.0062	ug/l
8001-35-2	Toxaphene	ND	0.27	0.20	ug/l
CAS No.	Surrogate Recoveries	Run# 1	Run# 2 Limits		ts

CAS No.	Surrogate Recoveries	Kun# I	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	85%		13-153%
877-09-8	Tetrachloro-m-xylene	86%		13-153%
2051-24-3	Decachlorobiphenyl	55%		10-138%
2051-24-3	Decachlorobiphenyl	47%		10-138%



ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Page 1 of 1

Client Sample ID: FB-012517

Lab Sample ID: JC36373-10 Date
Matrix: AQ - Field Blank Soil Date

Date Sampled: 01/25/17
Date Received: 01/27/17
Percent Solids: n/a

Project: BMSMC, PR

Total Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	25.3 B	200	21	ug/l	1	01/31/17	02/01/17 DE	SW846 6010C ²	SW846 3010A ³
Antimony	3.3 U	6.0	3.3	ug/l	1	01/31/17	02/01/17 DE	SW846 6010C ²	SW846 3010A ³
Arsenic	2.2 U	3.0	2.2	ug/l	1	01/31/17	02/01/17 DE	SW846 6010C ²	SW846 3010A ³
Barium	1.7 B	200	0.44	ug/l	1	01/31/17	02/01/17 DE	SW846 6010C ²	SW846 3010A ³
Beryllium	0.25 U	1.0	0.25	ug/l	1	01/31/17	02/01/17 DE	SW846 6010C ²	SW846 3010A ³
Cadmium	0.40 U	3.0	0.40	ug/l	1	01/31/17	02/01/17 DE	SW846 6010C ²	SW846 3010A ³
Calcium	326 B	5000	33	ug/l	1	01/31/17	02/01/17 DE	SW846 6010C ²	SW846 3010A ³
Chromium	0.81 U	10	0.81	ug/l	1	01/31/17	02/01/17 DE	SW846 6010C ²	SW846 3010A ³
Cobalt	0.69 U	50	0.69	ug/l	1	01/31/17	02/01/17 DE	SW846 6010C ²	SW846 3010A ³
Copper	2.4 U	10	2.4	ug/l	1	01/31/17	02/01/17 DE	SW846 6010C ²	SW846 3010A ³
Iron	12 U	100	12	ug/l	1	01/31/17	02/01/17 DE	SW846 6010C ²	SW846 3010A ³
Lead	2.3 U	3.0	2.3	ug/l	1	01/31/17	02/01/17 DE	SW846 6010C ²	SW846 3010A ³
Magnesium	85 U	5000	85	ug/l	1	01/31/17	02/01/17 DE	SW846 6010C ²	SW846 3010A ³
Manganese	9.1 B	15	0.39	ug/l	1	01/31/17	02/01/17 DE	SW846 6010C ²	SW846 3010A ³
Mercury	0.059 B	0.20	0.047	ug/l	1	02/01/17	02/01/17 JPM	I SW846 7470A ¹	SW846 7470A ⁴
Nickel	0.76 U	10	0.76	ug/l	1	01/31/17	02/01/17 DE	SW846 6010C ²	SW846 3010A ³
Potassium	120 U	10000	120	ug/l	1	01/31/17	02/01/17 DE	SW846 6010C ²	SW846 3010A ³
Selenium	4.1 U	10	4.1	ug/l	1	01/31/17	02/01/17 DE	SW846 6010C ²	SW846 3010A ³
Silver	0.88 U	10	0.88	ug/l	1	01/31/17	02/01/17 DE	SW846 6010C ²	SW846 3010A ³
Sodium	205 B	10000	24	ug/l	1	01/31/17	02/01/17 DE	SW846 6010C ²	SW846 3010A ³
Thallium	1.9 U	10	1.9	ug/l	1	01/31/17	02/01/17 DE	SW846 6010C ²	SW846 3010A ³
Vanadium	0.66 U	50	0.66	ug/l	1	01/31/17	02/01/17 DE	SW846 6010C ²	SW846 3010A ³
Zinc	1.3 U	20	1.3	ug/l	1	01/31/17	02/01/17 DE	SW846 6010C ²	SW846 3010A ³

(1) Instrument QC Batch: MA41282(2) Instrument QC Batch: MA41283(3) Prep QC Batch: MP98461(4) Prep QC Batch: MP98472





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JC36373: Chain of Custody Page 1 of 4

EXECUTIVE NARRATIVE

SDG No:

JC36373

Laboratory:

Accutest, New Jersey

Analysis:

SW846-8270D

Number of Samples:

10

Location:

BMSMC, Humacao, PR

SUMMARY: Ten (10) samples were analyzed for selected SVOCs following method SW846-8270D and selected PAHs were also analyzed by SW846-8270D using the selective ion monitoring (SIM) technique. The sample results were assessed according to USEPA data validation guidance documents in the following order of precedence: EPA Hazardous Waste Support Section, SOP HW-35A, July 2015 —Revision 0. Semivolatile Data Validation. The QC criteria and data validation actions listed on the data review worksheets are from the primary guidance document, unless otherwise noted.

Results are valid and can be used for decision making purposes.

Critical issues:

None

Maior:

None

Minor:

None

Critical findings:

None

Major findings:

None

Minor findings:

1. Initial and continuing calibration verifications meet the method and guidance document required performance criteria except in the cases described in the Data Review Worksheet. Results for were qualified as estimated (J or UJ) in affected samples.

No closing calibration verification included in data package. No action taken, professional judgment.

QC samples were not validated.

- 2. MS/MSD % recovery and RPD within laboratory control limits except for the cases described in the Data Review Worksheet. MS/MSD % recovery and RPD apply to the unspiked sample; unspiked sample from another job. No qualification made based on MS/MSD recovery results.
- **3.** Sample JC36373-2 extracted outside holding time to confirm surrogate recovery. No action taken, professional judgment. Original sample extracted and analyzed within method recommended holding time.
- Surrogate standards biased high in sample JC36373-2 due to possible matrix interference. Confirmed by re-extraction outside holding time. No action taken, professional judgment.

COMMENTS:

Results are valid and can be used for decision making purposes.

Reviewers Name:

Rafael Infante

Chemist License 1888

Signature:

Date:

February 19 2017

SAMPLE ORGANIC DATA SAMPLE SUMMARY

Sample ID: JC36373-1

Sample location: BMSMC, Humacao, PR

Sampling date: 1/25/2017

Matrix: Soil

METHOD: 8270D

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
2-Chlorophenol	71	ug/kg	1	=	U	Yes
4-Chloro-3-methyl phenol	180	ug/kg	1	-	U	Yes
2,4-Dichlorophenol	180	ug/kg	1	=	U	Yes
2,4-Dimethylphenol	180	ug/kg	1	=	U	Yes
2,4-Dinitrophenol	180	ug/kg	1	=	U	Yes
4,6-Dinitro-o-cresol	180	ug/kg	1	-	U	Yes
2-Methylphenol	71	ug/kg	1	-	U	Yes
3&4-Methylphenol	71	ug/kg	1	=	U	Yes
2-Nitrophenol	180	ug/kg	1	-	U	Yes
4-Nitrophenol	350	ug/kg	1	=	U	Yes
Pentachlorophenol	140	ug/kg	1	=	U	Yes
Phenol	71	ug/kg	1	=	U	Yes
2,3,4,6-Tetrachlorophenol	180	ug/kg	1	=	U	Yes
2,4,5-Trichlorophenol	180	ug/kg	1	=	U	Yes
2,4,6-Trichlorophenol	180	ug/kg	1	-	U	Yes
Acenaphthene	35	ug/kg	1	-	U	Yes
Acenaphthylene	35	ug/kg	1	-	U	Yes
Acetophenone	180	ug/kg	1	-	U	Yes
Anthracene	35	ug/kg	1	-	U	Yes
Atrazine	71	ug/kg	1	-	U	Yes
Benzo(a)anthracene	35	ug/kg	1	-	U	Yes
Benzo(b)fluoranthene	35	ug/kg	1	-	U	Yes
Benzo(g,h,i)perylene	35	ug/kg	1	-	U	Yes
Benzo(k)fluoranthene	35	ug/kg	1	-	U	Yes
4-Bromophenyl phenyl ether	71	ug/kg	1	-	U	Yes
Butyl benzyl phthalate	71	ug/kg	1	-	U	Yes
1,1'-Biphenyl	71	ug/kg	1	-	U	Yes
Benzaldehyde	180	ug/kg	1	-	U	Yes
2-Chloronaphthalene	71	ug/kg	1	-	U	Yes
4-Chloroaniline	180	ug/kg	1	-	U	Yes
Carbazole	71	ug/kg	1	-	U	Yes
Caprolactam	71	ug/kg	1	-	U	Yes
Chrysene	35	ug/kg	1	-	U	Yes
bis(2-Chloroethoxy)methane	71	ug/kg	1	-	U	Yes
bis(2-Chloroethyl)ether	71	ug/kg	1	-	U	Yes

bis(2-Chloroisopropyl)ether	71	ug/kg	1	-	U	Yes					
4-Chlorophenyl phenyl ether	71	ug/kg	1	-	U	Yes					
2,4-Dinitrotoluene	35	ug/kg	1	-	U	Yes					
2,6-Dinitrotoluene	35	ug/kg	1	-	U	Yes					
3,3'-Dichlorobenzidine	71	ug/kg	1	-	U	Yes					
1,4-Dioxane	35	ug/kg	1	-	U	Yes					
Dibenzofuran	71	ug/kg	1	_	U	Yes					
Di-n-butyl phthalate	71	ug/kg	1	_	U	Yes					
Di-n-octyl phthalate	71	ug/kg	1	_	U	Yes					
Diethyl phthalate	71	ug/kg	1	_	U	Yes					
Dimethyl phthalate	71	ug/kg	1	_	U	Yes					
bis(2-Ethylhexyl)phthalate	71	ug/kg	1	-	U	Yes					
Fluoranthene	35	ug/kg	1	-	U	Yes					
Fluorene	35	ug/kg	1	-	U	Yes					
Hexachlorobenzene	71	ug/kg	1	-	U	Yes					
Hexachlorobutadiene	35	ug/kg	1	-	U	Yes					
Hexachlorocyclopentadiene	350	ug/kg	1	-	U	Yes					
Hexachloroethane	180	ug/kg	1	-	U	Yes					
Indeno(1,2,3-cd)pyrene	35	ug/kg	1	-	U	Yes					
Isophorone	71	ug/kg	1	-	U	Yes					
1-Methylnaphthalene	71	ug/kg	1	-	U	Yes					
2-Methylnaphthalene	71	ug/kg	1	-	U	Yes					
2-Nitroaniline	180	ug/kg	1	-	U	Yes					
3-Nitroaniline	180	ug/kg	1	-	U	Yes					
4-Nitroaniline	180	ug/kg	1	-	U	Yes					
Naphthalene	35	ug/kg	1	-	U	Yes					
Nitrobenzene	71	ug/kg	1	-	U	Yes					
N-Nitroso-di-n-propylamine	71	ug/kg	1	-	U	Yes					
Nitrosodiphenylamine	180	ug/kg	1	-	U	Yes					
Phenanthrene	35	ug/kg	1	-	U	Yes					
Pyrene	35	ug/kg	1	-	U	Yes					
1,2,4,5-Tetrachlorobenzene	180	ug/kg	1	-	U	Yes					
METHOD: 8270D (SIM)											
Benzo(a)pyrene	3.5	ug/kg	1	-	U	Yes					
Dibenzo(a,h)anthracene	3.5	ug/kg	1	-	U	Yes					

Sample ID: JC36373-2

Sample location: BMSMC, Humacao, PR

Sampling date: 1/25/2017

Matrix: Soil

METHOD: 8270D

	·					
Analyte Name	Result	Units [Dilution Factor	Lab Flag	Validation	Reportable
2-Chlorophenol	73	ug/kg	1	-	U	Yes
4-Chloro-3-methyl phenol	180	ug/kg	1	-	U	Yes
2,4-Dichlorophenol	180	ug/kg	1	-	U	Yes
2,4-Dimethylphenol	180	ug/kg	1	-	U	Yes
2,4-Dinitrophenol	180	ug/kg	1	-	U	Yes
4,6-Dinitro-o-cresol	180	ug/kg	1	-	U	Yes
2-Methylphenol	73	ug/kg	1	-	U	Yes
3&4-Methylphenol	73	ug/kg	1	-	U	Yes
2-Nitrophenol	180	ug/kg	1	-	U	Yes
4-Nitrophenol	360	ug/kg	1	-	U	Yes
Pentachlorophenol	150	ug/kg	1	-	U	Yes
Phenol	73	ug/kg	1	-	U	Yes
2,3,4,6-Tetrachlorophenol	180	ug/kg	1	-	U	Yes
2,4,5-Trichlorophenol	180	ug/kg	1	=	U	Yes
2,4,6-Trichlorophenol	180	ug/kg	1	=	U	Yes
Acenaphthene	36	ug/kg	1	=	U	Yes
Acenaphthylene	36	ug/kg	1	-	U	Yes
Acetophenone	180	ug/kg	1	-	U	Yes
Anthracene	36	ug/kg	1	-	U	Yes
Atrazine	71	ug/kg	1	-	U	Yes
Benzo(a)anthracene	22.5	ug/kg	1	J	J	Yes
Benzo(b)fluoranthene	31.1	ug/kg	1	J	J	Yes
Benzo(g,h,i)perylene	18.9	ug/kg	1	J	J	Yes
Benzo(k)fluoranthene	36	ug/kg	1	-	U	Yes
4-Bromophenyl phenyl ether	73	ug/kg	1	-	U	Yes
Butyl benzyl phthalate	73	ug/kg	1	-	U	Yes
1,1'-Biphenyl	73	ug/kg	1	-	U	Yes
Benzaldehyde	180	ug/kg	1	=	U	Yes
2-Chloronaphthalene	73	ug/kg	1	=	U	Yes
4-Chloroaniline	180	ug/kg	1	=	U	Yes
Carbazole	73	ug/kg	1	=	U	Yes
Caprolactam	73	ug/kg	1	=	U	Yes
Chrysene	22.6	ug/kg	1	J	J	Yes
bis(2-Chloroethoxy)methane	73	ug/kg	1	-	U	Yes
bis(2-Chloroethyl)ether	73	ug/kg	1	-	U	Yes
bis (2-Chlorois opropyl) ether	73	ug/kg	1	-	U	Yes
4-Chlorophenyl phenyl ether	73	ug/kg	1	-	U	Yes

2,4-Dinitrotoluene	36	ug/kg	1	-	U	Yes
2,6-Dinitrotoluene	36	ug/kg	1	-	U	Yes
3,3'-Dichlorobenzidine	73	ug/kg	1	-	U	Yes
1,4-Dioxane	36	ug/kg	1	-	U	Yes
Dibenzofuran	73	ug/kg	1	-	U	Yes
Di-n-butyl phthalate	73	ug/kg	1	-	U	Yes
Di-n-octyl phthalate	73	ug/kg	1	-	U	Yes
Diethyl phthalate	73	ug/kg	1	-	U	Yes
Dimethyl phthalate	73	ug/kg	1	-	U	Yes
bis(2-Ethylhexyl)phthalate	53.9	ug/kg	1	J	J	Yes
Fluoranthene	37.0	ug/kg	1	-	-	Yes
Fluorene	36	ug/kg	1	=	U	Yes
Hexachlorobenzene	73	ug/kg	1	=	U	Yes
Hexachlorobutadiene	36	ug/kg	1	=	U	Yes
Hexachlorocyclopentadiene	360	ug/kg	1	=	U	Yes
Hexachloroethane	180	ug/kg	1	=	U	Yes
Indeno(1,2,3-cd)pyrene	21.1	ug/kg	1	J	J	Yes
Isophorone	73	ug/kg	1	_	U	Yes
1-Methylnaphthalene	73	ug/kg	1	_	U	Yes
2-Methylnaphthalene	73	ug/kg	1	_	U	Yes
2-Nitroaniline	180	ug/kg	1	_	U	Yes
3-Nitroaniline	180	ug/kg	1	_	U	Yes
4-Nitroaniline	180	ug/kg	1	_	U	Yes
Naphthalene	36	ug/kg	1	-	U	Yes
Nitrobenzene	73	ug/kg	1	-	U	Yes
N-Nitroso-di-n-propylamine	73	ug/kg	1	_	U	Yes
Nitrosodiphenylamine	180	ug/kg	1	_	U	Yes
Phenanthrene	17.2	ug/kg	1	J	J	Yes
Pyrene	33.8	ug/kg	1	J	J	Yes
1,2,4,5-Tetrachlorobenzene	180	ug/kg	1	-	U	Yes

METHOD: 8270D (SIM)

Benzo(a)pyrene	19.7	ug/kg	1	-	-	Yes
Dibenzo(a,h)anthracene	3.6	ug/kg	1	-	U	Yes

Sample ID: JC36373-3

Sample location: BMSMC, Humacao, PR

Sampling date: 1/25/2017

Matrix: Soil

METHOD: 8270D

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
2-Chlorophenol	69	ug/kg	1	-	U	Yes
4-Chloro-3-methyl phenol	170	ug/kg	1	_	U	Yes
2,4-Dichlorophenol	170	ug/kg	1	-	U	Yes
2,4-Dimethylphenol	170	ug/kg	1	-	U	Yes
2,4-Dinitrophenol	170	ug/kg	1	-	U	Yes
4,6-Dinitro-o-cresol	170	ug/kg	1	=	U	Yes
2-Methylphenol	69	ug/kg	1	=	U	Yes
3&4-Methylphenol	69	ug/kg	1	=	U	Yes
2-Nitrophenol	170	ug/kg	1	=	U	Yes
4-Nitrophenol	350	ug/kg	1	-	U	Yes
Pentachlorophenol	140	ug/kg	1	-	U	Yes
Phenol	59.9	ug/kg	1	J	J	Yes
2,3,4,6-Tetrachlorophenol	170	ug/kg	1	-	U	Yes
2,4,5-Trichlorophenol	170	ug/kg	1	=	U	Yes
2,4,6-Trichlorophenol	170	ug/kg	1	=	U	Yes
Acenaphthene	35	ug/kg	1	=	U	Yes
Acenaphthylene	35	ug/kg	1	-	U	Yes
Acetophenone	170	ug/kg	1	-	U	Yes
Anthracene	35	ug/kg	1	-	U	Yes
Atrazine	69	ug/kg	1	-	U	Yes
Benzo(a)anthracene	35	ug/kg	1	-	U	Yes
Benzo(b)fluoranthene	35	ug/kg	1	-	U	Yes
Benzo(g,h,i)perylene	35	ug/kg	1	-	U	Yes
Benzo(k)fluoranthene	35	ug/kg	1	-	U	Yes
4-Bromophenyl phenyl ether	69	ug/kg	1	-	U	Yes
Butyl benzyl phthalate	69	ug/kg	1	=	U	Yes
1,1'-Biphenyl	69	ug/kg	1	=	U	Yes
Benzaldehyde	23.5	ug/kg	1	J	J	Yes
2-Chloronaphthalene	69	ug/kg	1	-	U	Yes
4-Chloroaniline	170	ug/kg	1	-	U	Yes
Carbazole	69	ug/kg	1	-	U	Yes
Caprolactam	69	ug/kg	1	-	U	Yes
Chrysene	35	ug/kg	1	-	U	Yes
bis(2-Chloroethoxy)methane	69	ug/kg	1	-	U	Yes
bis(2-Chloroethyl)ether	69	ug/kg	1	-	U	Yes
bis (2-Chlorois opropyl) ether	69	ug/kg	1	-	U	Yes
4-Chlorophenyl phenyl ether	69	ug/kg	1	-	U	Yes

2,4-Dinitrotoluene	35	ug/kg	1	_	U	Yes					
2,6-Dinitrotoluene	35	ug/kg	1	_	U	Yes					
3,3'-Dichlorobenzidine	69	ug/kg	1	_	U	Yes					
1,4-Dioxane	35	ug/kg	1	_	U	Yes					
Dibenzofuran	69	ug/kg	1	_	U	Yes					
Di-n-butyl phthalate	69	ug/kg	1	_	U	Yes					
Di-n-octyl phthalate	69	ug/kg	1	_	U	Yes					
Diethyl phthalate	69	ug/kg	1	_	U	Yes					
Dimethyl phthalate	69	ug/kg	1	_	U	Yes					
bis(2-Ethylhexyl)phthalate	146	ug/kg	1	_	-	Yes					
Fluoranthene	35	ug/kg	1	_	U	Yes					
Fluorene	35	ug/kg	1	=	U	Yes					
Hexachlorobenzene	69	ug/kg	1	_	U	Yes					
Hexachlorobutadiene	35	ug/kg	1	_	U	Yes					
Hexachlorocyclopentadiene	350	ug/kg	1	-	U	Yes					
Hexachloroethane	170	ug/kg	1	-	U	Yes					
Indeno(1,2,3-cd)pyrene	35	ug/kg	1	-	U	Yes					
Isophorone	69	ug/kg	1	-	U	Yes					
1-Methylnaphthalene	69	ug/kg	1	-	U	Yes					
2-Methylnaphthalene	69	ug/kg	1	-	U	Yes					
2-Nitroaniline	170	ug/kg	1	-	U	Yes					
3-Nitroaniline	170	ug/kg	1	-	U	Yes					
4-Nitroaniline	170	ug/kg	1	-	U	Yes					
Naphthalene	35	ug/kg	1	-	U	Yes					
Nitrobenzene	69	ug/kg	1	-	U	Yes					
N-Nitroso-di-n-propylamine	69	ug/kg	1	-	U	Yes					
Nitrosodiphenylamine	170	ug/kg	1	-	U	Yes					
Phenanthrene	35	ug/kg	1	-	U	Yes					
Pyrene	35	ug/kg	1	-	U	Yes					
1,2,4,5-Tetrachlorobenzene	170	ug/kg	1	-	U	Yes					
METHOD: 8270D (SIM)											
Benzo(a)pyrene	3.5	ug/kg	1	_	U	Yes					
Dibenzo(a,h)anthracene	3.5	ug/kg	1	_	U	Yes					
5.55.1120(a).11/a11till accine	5.5	49/ 1/8	-		9	103					

Sample ID: JC36373-4

Sample location: BMSMC, Humacao, PR

Sampling date: 1/25/2017

Matrix: Soil

METHOD: 8270D

	METHOD:	-					
	Analyte Name	Result		Dilution Factor	Lab Flag		
	2-Chlorophenol	74	ug/kg	1	-	U	Yes
	4-Chloro-3-methyl phenol	180	ug/kg	1	-	U	Yes
	2,4-Dichlorophenol	180	ug/kg	1	-	U	Yes
2	2,4-Dimethylphenol	180	ug/kg	1	=	U	Yes
2	2,4-Dinitrophenol	180	ug/kg	1	-	U	Yes
	1,6-Dinitro-o-cresol	180	ug/kg	1	-	U	Yes
2	2-Methylphenol	74	ug/kg	1	-	U	Yes
3	3&4-Methylphenol	74	ug/kg	1	-	U	Yes
2	2-Nitrophenol	180	ug/kg	1	-	U	Yes
4	4-Nitrophenol	370	ug/kg	1	-	U	Yes
I	Pentachlorophenol	150	ug/kg	1	=	U	Yes
ı	Phenol	74	ug/kg	1	-	U	Yes
2	2,3,4,6-Tetrachlorophenol	180	ug/kg	1	-	U	Yes
2	2,4,5-Trichlorophenol	180	ug/kg	1	-	U	Yes
2	2,4,6-Trichlorophenol	180	ug/kg	1	-	U	Yes
/	Acenaphthene	37	ug/kg	1	-	U	Yes
/	Acenaphthylene	37	ug/kg	1	-	U	Yes
/	Acetophenone	180	ug/kg		-	U	Yes
/	Anthracene	36	ug/kg	1	-	U	Yes
/	Atrazine	71	ug/kg	1	-	U	Yes
ı	Benzo(a)anthracene	37	ug/kg	1	-	U	Yes
ı	Benzo(b)fluoranthene	37	ug/kg	1	-	U	Yes
ı	Benzo(g,h,i)perylene	37	ug/kg	1	-	U	Yes
ı	Benzo(k)fluoranthene	37	ug/kg	1	-	U	Yes
4	1-Bromophenyl phenyl ether	74	ug/kg		-	U	Yes
ı	Butyl benzyl phthalate	74	ug/kg	1	-	U	Yes
-	1,1'-Biphenyl	74	ug/kg		-	U	Yes
ı	Benzaldehyde	26.0	ug/kg	1	J	J	Yes
2	2-Chloronaphthalene	74	ug/kg	1	-	U	Yes
4	1-Chloroaniline	180	ug/kg	1	-	U	Yes
(Carbazole	74	ug/kg	1	-	U	Yes
(Caprolactam	74	ug/kg	1	-	U	Yes
(Chrysene	37	ug/kg	1	-	U	Yes
ŀ	ois(2-Chloroethoxy)methane	74	ug/kg	1	=	U	Yes
	ois(2-Chloroethyl)ether	74	ug/kg	1	-	U	Yes
I	ois(2-Chloroisopropyl)ether	74	ug/kg	1	-	U	Yes
	4-Chlorophenyl phenyl ether	74	ug/kg	1	-	U	Yes
	2,4-Dinitrotoluene	37	ug/kg	1	-	U	Yes
	2,6-Dinitrotoluene	37	ug/kg		-	U	Yes
			J. U				

3,3'-Dichlorobenzidine	74	ug/kg	1	-	U	Yes
1,4-Dioxane	37	ug/kg	1	=	U	Yes
Dibenzofuran	74	ug/kg	1	=	U	Yes
Di-n-butyl phthalate	74	ug/kg	1	=	U	Yes
Di-n-octyl phthalate	74	ug/kg	1	=	U	Yes
Diethyl phthalate	74	ug/kg	1	=	U	Yes
Dimethyl phthalate	74	ug/kg	1	-	U	Yes
bis(2-Ethylhexyl)phthalate	74	ug/kg	1	=	U	Yes
Fluoranthene	37	ug/kg	1	=	U	Yes
Fluorene	37	ug/kg	1	=	U	Yes
Hexachlorobenzene	74	ug/kg	1	=	U	Yes
Hexachlorobutadiene	37	ug/kg	1	-	U	Yes
Hexachlorocyclopentadiene	370	ug/kg	1	-	U	Yes
Hexachloroethane	180	ug/kg	1	=	U	Yes
Indeno(1,2,3-cd)pyrene	37	ug/kg	1	-	U	Yes
Isophorone	74	ug/kg	1	=	U	Yes
1-Methylnaphthalene	74	ug/kg	1	=	U	Yes
2-Methylnaphthalene	74	ug/kg	1	-	U	Yes
2-Nitroaniline	180	ug/kg	1	=	U	Yes
3-Nitroaniline	180	ug/kg	1	=	U	Yes
4-Nitroaniline	180	ug/kg	1	=	U	Yes
Naphthalene	37	ug/kg	1	=	U	Yes
Nitrobenzene	74	ug/kg	1	=	U	Yes
N-Nitroso-di-n-propylamine	74	ug/kg	1	=	U	Yes
Nitrosodiphenylamine	180	ug/kg	1	=	U	Yes
Phenanthrene	37	ug/kg	1	-	U	Yes
Pyrene	37	ug/kg	1	=	U	Yes
1,2,4,5-Tetrachlorobenzene	180	ug/kg	1	-	U	Yes
METHOD:	8270D (SII	∨ I)				
Benzo(a)pyrene	4.69	ug/kg	1	-	-	Yes
Dibenzo(a,h)anthracene	3.7	ug/kg	1	-	U	Yes

Sample ID: JC36373-5

Sample location: BMSMC, Humacao, PR

Sampling date: 1/25/2017

Matrix: Soil

METHOD: 8270D

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
2-Chlorophenol	75	ug/kg	1	-	U	Yes
4-Chloro-3-methyl phenol	190	ug/kg	1	=	U	Yes
2,4-Dichlorophenol	190	ug/kg	1	=	U	Yes
2,4-Dimethylphenol	190	ug/kg	1	-	U	Yes
2,4-Dinitrophenol	190	ug/kg	1	-	U	Yes
4,6-Dinitro-o-cresol	190	ug/kg	1	-	U	Yes
2-Methylphenol	75	ug/kg	1	-	U	Yes
3&4-Methylphenol	75	ug/kg	1	-	U	Yes
2-Nitrophenol	190	ug/kg	1	-	U	Yes
4-Nitrophenol	370	ug/kg	1	-	U	Yes
Pentachlorophenol	150	ug/kg	1	-	U	Yes
Phenol	75	ug/kg	1	-	U	Yes
2,3,4,6-Tetrachlorophenol	190	ug/kg	1	-	U	Yes
2,4,5-Trichlorophenol	190	ug/kg	1	-	U	Yes
2,4,6-Trichlorophenol	190	ug/kg	1	-	U	Yes
Acenaphthene	37	ug/kg	1	-	U	Yes
Acenaphthylene	37	ug/kg	1	-	U	Yes
Acetophenone	190	ug/kg	1	-	U	Yes
Anthracene	37	ug/kg	1	-	U	Yes
Atrazine	75	ug/kg	1	-	U	Yes
Benzo(a)anthracene	37	ug/kg	1	=	U	Yes
Benzo(b)fluoranthene	37	ug/kg	1	-	U	Yes
Benzo(g,h,i)perylene	37	ug/kg	1	-	U	Yes
Benzo(k)fluoranthene	37	ug/kg	1	=	U	Yes
4-Bromophenyl phenyl ether	75	ug/kg	1	=	U	Yes
Butyl benzyl phthalate	75	ug/kg	1	=	U	Yes
1,1'-Biphenyl	75	ug/kg	1	-	U	Yes
Benzaldehyde	41.8	ug/kg	1	J	J	Yes
2-Chloronaphthalene	75	ug/kg	1	-	U	Yes
4-Chloroaniline	190	ug/kg	1	-	U	Yes
Carbazole	75	ug/kg	1	-	U	Yes
Caprolactam	75	ug/kg	1	-	U	Yes
Chrysene	37	ug/kg	1	-	U	Yes
bis(2-Chloroethoxy)methane	75	ug/kg	1	-	U	Yes
bis(2-Chloroethyl)ether	75	ug/kg	1	-	U	Yes
bis(2-Chloroisopropyl)ether	75	ug/kg	1	-	U	Yes
4-Chlorophenyl phenyl ether	75	ug/kg	1	-	U	Yes
2,4-Dinitrotoluene	37	ug/kg	1	-	U	Yes
2,6-Dinitrotoluene	37	ug/kg	1	-	U	Yes
3,3'-Dichlorobenzidine	75	ug/kg	1	-	U	Yes
1,4-Dioxane	37	ug/kg	1	-	U	Yes

Dibenzofuran	75	ug/kg	1	-	U	Yes			
Di-n-butyl phthalate	75	ug/kg	1	-	U	Yes			
Di-n-octyl phthalate	75	ug/kg	1	-	U	Yes			
Diethyl phthalate	75	ug/kg	1	-	U	Yes			
Dimethyl phthalate	75	ug/kg	1	-	U	Yes			
bis(2-Ethylhexyl)phthalate	75	ug/kg	1	-	U	Yes			
Fluoranthene	37	ug/kg	1	-	U	Yes			
Fluorene	37	ug/kg	1	-	U	Yes			
Hexachlorobenzene	75	ug/kg	1	-	U	Yes			
Hexachlorobutadiene	37	ug/kg	1	-	U	Yes			
Hexachlorocyclopentadiene	370	ug/kg	1	-	U	Yes			
Hexachloroethane	190	ug/kg	1	-	U	Yes			
Indeno(1,2,3-cd)pyrene	37	ug/kg	1	-	U	Yes			
Isophorone	75	ug/kg	1	-	U	Yes			
1-Methylnaphthalene	75	ug/kg	1	-	U	Yes			
2-Methylnaphthalene	75	ug/kg	1	-	U	Yes			
2-Nitroaniline	190	ug/kg	1	-	U	Yes			
3-Nitroaniline	190	ug/kg	1	-	U	Yes			
4-Nitroaniline	190	ug/kg	1	-	U	Yes			
Naphthalene	37	ug/kg	1	-	U	Yes			
Nitrobenzene	75	ug/kg	1	-	U	Yes			
N-Nitroso-di-n-propylamine	75	ug/kg	1	-	U	Yes			
Nitrosodiphenylamine	190	ug/kg	1	-	U	Yes			
Phenanthrene	37	ug/kg	1	-	U	Yes			
Pyrene	37	ug/kg	1	-	U	Yes			
1,2,4,5-Tetrachlorobenzene	190	ug/kg	1	-	U	Yes			
METHOD: 8270D (SIM)									
	82700 (SII 4.17	•	1			Yes			
Benzo(a)pyrene		ug/kg	1	-	- U				
Dibenzo(a,h)anthracene	3.7	ug/kg	1	-	U	Yes			

Sample ID: JC36373-6

Sample location: BMSMC, Humacao, PR

Sampling date: 1/25/2017

Matrix: Soil

METHOD: 8270D

Analyte Name	Result	Units Di	lution Factor	Lab Flag	Validation	Reportable
2-Chlorophenol	83	ug/kg	1	-	U	Yes
4-Chloro-3-methyl phenol	210	ug/kg	1	-	U	Yes
2,4-Dichlorophenol	210	ug/kg	1	-	U	Yes
2,4-Dimethylphenol	210	ug/kg	1	-	U	Yes
2,4-Dinitrophenol	210	ug/kg	1	-	U	Yes
4,6-Dinitro-o-cresol	210	ug/kg	1	-	U	Yes
2-Methylphenol	83	ug/kg	1	-	U	Yes
3&4-Methylphenol	83	ug/kg	1	-	U	Yes
2-Nitrophenol	210	ug/kg	1	-	U	Yes
4-Nitrophenol	420	ug/kg	1	-	U	Yes
Pentachlorophenol	170	ug/kg	1	=	U	Yes
Phenol	83	ug/kg	1	=	U	Yes
2,3,4,6-Tetrachlorophenol	210	ug/kg	1	=	U	Yes
2,4,5-Trichlorophenol	210	ug/kg	1	-	U	Yes
2,4,6-Trichlorophenol	210	ug/kg	1	-	U	Yes
Acenaphthene	42	ug/kg	1	-	U	Yes
Acenaphthylene	42	ug/kg	1	-	U	Yes
Acetophenone	210	ug/kg	1	-	U	Yes
Anthracene	36	ug/kg	1	-	U	Yes
Atrazine	83	ug/kg	1	-	U	Yes
Benzo(a)anthracene	42	ug/kg	1	-	U	Yes
Benzo(b)fluoranthene	42	ug/kg	1	-	U	Yes
Benzo(g,h,i)perylene	42	ug/kg	1	-	U	Yes
Benzo(k)fluoranthene	42	ug/kg	1	-	U	Yes
4-Bromophenyl phenyl ether	83	ug/kg	1	-	U	Yes
Butyl benzyl phthalate	83	ug/kg	1	-	U	Yes
1,1'-Biphenyl	83	ug/kg	1	-	U	Yes
Benzaldehyde	39.1	ug/kg	1	J	J	Yes
2-Chloronaphthalene	83	ug/kg	1	-	U	Yes
4-Chloroaniline	210	ug/kg	1	-	U	Yes
Carbazole	83	ug/kg	1	-	U	Yes
Caprolactam	83	ug/kg	1	-	U	Yes
Chrysene	42	ug/kg	1	-	U	Yes
bis(2-Chloroethoxy)methane	83	ug/kg	1	-	U	Yes
bis(2-Chloroethyl)ether	83	ug/kg	1	-	U	Yes
bis(2-Chloroisopropyl)ether	83	ug/kg	1	-	U	Yes
4-Chlorophenyl phenyl ether	83	ug/kg	1	-	U	Yes
2,4-Dinitrotoluene	42	ug/kg	1	=	U	Yes
2,6-Dinitrotoluene	42	ug/kg	1	-	U	Yes
3,3'-Dichlorobenzidine	83	ug/kg	1	-	U	Yes
1,4-Dioxane	42	ug/kg	1	-	U	Yes
Dibenzofuran	83	ug/kg	1	-	U	Yes
Di-n-butyl phthalate	83	ug/kg	1	-	U	Yes

Di-n-octyl phthalate	83	ug/kg	1	-	U	Yes
Diethyl phthalate	83	ug/kg	1	-	U	Yes
Dimethyl phthalate	83	ug/kg	1	-	U	Yes
bis(2-Ethylhexyl)phthalate	83	ug/kg	1	-	U	Yes
Fluoranthene	42	ug/kg	1	-	U	Yes
Fluorene	42	ug/kg	1	-	U	Yes
Hexachlorobenzene	83	ug/kg	1	-	U	Yes
Hexachlorobutadiene	42	ug/kg	1	-	U	Yes
Hexachlorocyclopentadiene	420	ug/kg	1	-	U	Yes
Hexachloroethane	210	ug/kg	1	-	U	Yes
Indeno(1,2,3-cd)pyrene	42	ug/kg	1	-	U	Yes
Isophorone	83	ug/kg	1	-	U	Yes
1-Methylnaphthalene	83	ug/kg	1	-	U	Yes
2-Methylnaphthalene	83	ug/kg	1	-	U	Yes
2-Nitroaniline	210	ug/kg	1	-	U	Yes
3-Nitroaniline	210	ug/kg	1	-	U	Yes
4-Nitroaniline	210	ug/kg	1	-	U	Yes
Naphthalene	42	ug/kg	1	-	U	Yes
Nitrobenzene	83	ug/kg	1	-	U	Yes
N-Nitroso-di-n-propylamine	83	ug/kg	1	-	U	Yes
Nitrosodiphenylamine	210	ug/kg	1	-	U	Yes
Phenanthrene	42	ug/kg	1	-	U	Yes
Pyrene	42	ug/kg	1	-	U	Yes
1,2,4,5-Tetrachlorobenzene	210	ug/kg	1	-	U	Yes
METHOD: 8	3270D (SII	√ I)				
Benzo(a)pyrene	7.74	ug/kg	1	-	-	Yes
Dibenzo(a,h)anthracene	4.2	ug/kg	1	-	U	Yes

Sample location: BMSMC, Humacao, PR

Sampling date: 1/25/2017

Matrix: Soil

METHOD: 8270D

Analyte Name	Result	Units Dilut	ion Factor	Lab Flag	Validation	Reportable
2-Chlorophenol	69	ug/kg	1	=.	U	Yes

4-Chloro-3-methyl phenol	170	ug/kg	1	-	U	Yes
2,4-Dichlorophenol	170	ug/kg	1	-	U	Yes
2,4-Dimethylphenol	170	ug/kg	1	-	U	Yes
2,4-Dinitrophenol	170	ug/kg	1	-	U	Yes
4,6-Dinitro-o-cresol	170	ug/kg	1	-	U	Yes
2-Methylphenol	69	ug/kg	1	-	U	Yes
3&4-Methylphenol	69	ug/kg	1	=	U	Yes
2-Nitrophenol	170	ug/kg	1	-	U	Yes
4-Nitrophenol	350	ug/kg	1	=	U	Yes
Pentachlorophenol	140	ug/kg	1	-	U	Yes
Phenol	69	ug/kg	1	-	U	Yes
2,3,4,6-Tetrachlorophenol	170	ug/kg	1	-	U	Yes
2,4,5-Trichlorophenol	170	ug/kg	1	-	U	Yes
2,4,6-Trichlorophenol	170	ug/kg	1	-	U	Yes
Acenaphthene	35	ug/kg	1	-	U	Yes
Acenaphthylene	35	ug/kg	1	-	U	Yes
Acetophenone	170	ug/kg	1	-	U	Yes
Anthracene	35	ug/kg	1	-	U	Yes
Atrazine	69	ug/kg	1	-	U	Yes
Benzo(a)anthracene	35	ug/kg	1	-	U	Yes
Benzo(b)fluoranthene	35	ug/kg	1	-	U	Yes
Benzo(g,h,i)perylene	35	ug/kg	1	-	U	Yes
Benzo(k)fluoranthene	35	ug/kg	1	-	U	Yes
4-Bromophenyl phenyl ether	69	ug/kg	1	-	U	Yes
Butyl benzyl phthalate	69	ug/kg	1	=	U	Yes
1,1'-Biphenyl	69	ug/kg	1	-	U	Yes
Benzaldehyde	39.3	ug/kg	1	J	J	Yes
2-Chloronaphthalene	69	ug/kg	1	=	U	Yes
4-Chloroaniline	170	ug/kg	1	=	U	Yes
Carbazole	69	ug/kg	1	-	U	Yes
Caprolactam	69	ug/kg	1	=	U	Yes
Chrysene	35	ug/kg	1	-	U	Yes
bis(2-Chloroethoxy)methane	69	ug/kg	1	-	U	Yes
bis (2-Chloroethyl) ether	69	ug/kg	1	-	U	Yes
bis (2-Chlorois opropyl) ether	69	ug/kg	1	-	U	Yes
4-Chlorophenyl phenyl ether	69	ug/kg	1	-	U	Yes
2,4-Dinitrotoluene	35	ug/kg	1	=	U	Yes
2,6-Dinitrotoluene	35	ug/kg	1	-	U	Yes
3,3'-Dichlorobenzidine	69	ug/kg	1	-	U	Yes
1,4-Dioxane	35	ug/kg	1	-	U	Yes
Dibenzofuran	69	ug/kg	1	-	U	Yes
Di-n-butyl phthalate	69	ug/kg	1	-	U	Yes
Di-n-octyl phthalate	69	ug/kg	1	-	U	Yes
Diethyl phthalate	69	ug/kg	1	-	U	Yes

Dimethyl phthalate	66.3	ug/kg	1	J	J	Yes
bis(2-Ethylhexyl)phthalate	69	ug/kg	1	-	U	Yes
Fluoranthene	35	ug/kg	1	-	U	Yes
Fluorene	35	ug/kg	1	-	U	Yes
Hexachlorobenzene	69	ug/kg	1	-	U	Yes
Hexachlorobutadiene	35	ug/kg	1	-	U	Yes
Hexachlorocyclopentadiene	350	ug/kg	1	-	U	Yes
Hexachloroethane	170	ug/kg	1	-	U	Yes
Indeno(1,2,3-cd)pyrene	35	ug/kg	1	-	U	Yes
Isophorone	69	ug/kg	1	-	U	Yes
1-Methylnaphthalene	69	ug/kg	1	-	U	Yes
2-Methylnaphthalene	69	ug/kg	1	-	U	Yes
2-Nitroaniline	170	ug/kg	1	-	U	Yes
3-Nitroaniline	170	ug/kg	1	-	U	Yes
4-Nitroaniline	170	ug/kg	1	-	U	Yes
Naphthalene	35	ug/kg	1	-	U	Yes
Nitrobenzene	69	ug/kg	1	-	U	Yes
N-Nitroso-di-n-propylamine	69	ug/kg	1	-	U	Yes
Nitrosodiphenylamine	170	ug/kg	1	-	U	Yes
Phenanthrene	35	ug/kg	1	-	U	Yes
Pyrene	35	ug/kg	1	-	U	Yes
1,2,4,5-Tetrachlorobenzene	170	ug/kg	1	-	U	Yes
METHOD: 8	8270D (SII	M)				
Benzo(a)pyrene	3.5	ug/kg	1	-	U	Yes
Dibenzo(a,h)anthracene	3.5	ug/kg	1	-	U	Yes

Sample location: BMSMC, Humacao, PR

Sampling date: 1/25/2017

Matrix: Soil

METHOD: 8270D

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
2-Chlorophenol	69	ug/kg	1	-	U	Yes
4-Chloro-3-methyl phenol	170	ug/kg	1	-	U	Yes
2,4-Dichlorophenol	170	ug/kg	1	-	U	Yes

2,4-Dimethylphenol	170	ug/kg	1	-	U	Yes
2,4-Dinitrophenol	170	ug/kg	1	-	U	Yes
4,6-Dinitro-o-cresol	170	ug/kg	1	-	U	Yes
2-Methylphenol	69	ug/kg	1	-	U	Yes
3&4-Methylphenol	69	ug/kg	1	-	U	Yes
2-Nitrophenol	170	ug/kg	1	-	U	Yes
4-Nitrophenol	350	ug/kg	1	-	U	Yes
Pentachlorophenol	140	ug/kg	1	_	U	Yes
Phenol	69	ug/kg	1	-	U	Yes
2,3,4,6-Tetrachlorophenol	170	ug/kg	1	-	U	Yes
2,4,5-Trichlorophenol	170	ug/kg	1	=	U	Yes
2,4,6-Trichlorophenol	170	ug/kg	1	-	U	Yes
Acenaphthene	35	ug/kg	1	-	U	Yes
Acenaphthylene	35	ug/kg	1	-	U	Yes
Acetophenone	170	ug/kg	1	-	U	Yes
Anthracene	35	ug/kg	1	-	U	Yes
Atrazine	69	ug/kg	1	-	U	Yes
Benzo(a)anthracene	35	ug/kg	1	-	U	Yes
Benzo(b)fluoranthene	35	ug/kg	1	-	U	Yes
Benzo(g,h,i)perylene	35	ug/kg	1	-	U	Yes
Benzo(k)fluoranthene	35	ug/kg	1	-	U	Yes
4-Bromophenyl phenyl ether	69	ug/kg	1	-	U	Yes
Butyl benzyl phthalate	69	ug/kg	1	-	U	Yes
1,1'-Biphenyl	69	ug/kg	1	-	U	Yes
Benzaldehyde	18.2	ug/kg	1	J	J	Yes
2-Chloronaphthalene	69	ug/kg	1	-	U	Yes
4-Chloroaniline	170	ug/kg	1	-	U	Yes
Carbazole	69	ug/kg	1	-	U	Yes
Caprolactam	69	ug/kg	1	-	U	Yes
Chrysene	35	ug/kg	1	-	U	Yes
bis(2-Chloroethoxy)methane	69	ug/kg	1	-	U	Yes
bis(2-Chloroethyl)ether	69	ug/kg	1	-	U	Yes
bis(2-Chloroisopropyl)ether	69	ug/kg	1	-	U	Yes
4-Chlorophenyl phenyl ether	69	ug/kg	1	-	U	Yes
2,4-Dinitrotoluene	35	ug/kg	1	-	U	Yes
2,6-Dinitrotoluene	35	ug/kg	1	-	U	Yes
3,3'-Dichlorobenzidine	69	ug/kg	1	_	U	Yes
1,4-Dioxane	35	ug/kg	1	_	U	Yes
Dibenzofuran	69	ug/kg	1	_	U	Yes
Di-n-butyl phthalate	69	ug/kg	1	-	U	Yes
Di-n-octyl phthalate	69	ug/kg	1	-	U	Yes
Diethyl phthalate	69	ug/kg	1	-	U	Yes
Dimethyl phthalate	69	ug/kg	1	-	U	Yes
bis(2-Ethylhexyl)phthalate	69	ug/kg	1	-	U	Yes

Fluoranthene	35	ug/kg	1	-	U	Yes
Fluorene	35	ug/kg	1	-	U	Yes
Hexachlorobenzene	69	ug/kg	1	-	U	Yes
Hexachlorobutadiene	35	ug/kg	1	-	U	Yes
Hexachlorocyclopentadiene	340	ug/kg	1	-	U	Yes
Hexachloroethane	170	ug/kg	1	-	U	Yes
Indeno(1,2,3-cd)pyrene	35	ug/kg	1	-	U	Yes
Isophorone	69	ug/kg	1	-	U	Yes
1-Methylnaphthalene	69	ug/kg	1	-	U	Yes
2-Methylnaphthalene	69	ug/kg	1	-	U	Yes
2-Nitroaniline	170	ug/kg	1	-	U	Yes
3-Nitroaniline	170	ug/kg	1	-	U	Yes
4-Nitroaniline	170	ug/kg	1	-	U	Yes
Naphthalene	35	ug/kg	1	-	U	Yes
Nitrobenzene	69	ug/kg	1	-	U	Yes
N-Nitroso-di-n-propylamine	69	ug/kg	1	-	U	Yes
Nitrosodiphenylamine	170	ug/kg	1	-	U	Yes
Phenanthrene	35	ug/kg	1	-	U	Yes
Pyrene	35	ug/kg	1	-	U	Yes
1,2,4,5-Tetrachlorobenzene	170	ug/kg	1	-	U	Yes
METHOD:	-	-				
Benzo(a)pyrene	3.4	ug/kg	1	-	U	Yes
Dibenzo(a,h)anthracene	3.4	ug/kg	1	-	U	Yes

Sample location: BMSMC, Humacao, PR

Sampling date: 1/25/2017

Matrix: AQ -Equipment Blank

METHOD: 8270D

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
2-Chlorophenol	5.6	ug/l	1	-	U	Yes
4-Chloro-3-methyl phenol	5.6	ug/l	1	-	U	Yes
2,4-Dichlorophenol	2.2	ug/l	1	-	U	Yes
2,4-Dimethylphenol	5.6	ug/l	1	-	U	Yes
2,4-Dinitrophenol	11	ug/l	1	-	U	Yes

4,6-Dinitro-o-cresol	5.6	ug/l	1	-	U	Yes
2-Methylphenol	2.2	ug/l	1	-	U	Yes
3&4-Methylphenol	2.2	ug/l	1	-	U	Yes
2-Nitrophenol	5.6	ug/l	1	=	U	Yes
4-Nitrophenol	11	ug/l	1	_	U	Yes
Pentachlorophenol	4.4	ug/l	1	-	U	Yes
Phenol	2.2	ug/l	1	-	UJ	Yes
2,3,4,6-Tetrachlorophenol	5.6	ug/l	1	-	U	Yes
2,4,5-Trichlorophenol	5.6	ug/l	1	-	U	Yes
2,4,6-Trichlorophenol	5.6	ug/l	1	-	U	Yes
Acenaphthene	1.1	ug/l	1	-	U	Yes
Acenaphthylene	1.1	ug/l	1	-	U	Yes
Acetophenone	2.2	ug/l	1	-	U	Yes
Anthracene	1.1	ug/l	1	-	U	Yes
Atrazine	2.2	ug/l	1	=	UJ	Yes
Benzaldehyde	5.6	ug/l	1	=	U	Yes
Benzo(a)anthracene	1.1	ug/l	1	=	U	Yes
Benzo(a)pyrene	1.1	ug/l	1	-	U	Yes
Benzo(b)fluoranthene	1.1	ug/l	1	-	U	Yes
Benzo(g,h,i)perylene	1.1	ug/l	1	-	U	Yes
Benzo(k)fluoranthene	1.1	ug/l	1	-	U	Yes
4-Bromophenyl phenyl ether	1.1	ug/l	1	-	U	Yes
Butyl benzyl phthalate	2.2	ug/l	1	-	U	Yes
1,1'-Biphenyl	1.1	ug/l	1	-	U	Yes
2-Chloronaphthalene	2.2	ug/l	1	-	U	Yes
4-Chloroaniline	5.6	ug/l	1	-	U	Yes
Carbazole	1.1	ug/l	1	-	U	Yes
Caprolactam	2.2	ug/l	1	-	U	Yes
Chrysene	1.1	ug/l	1	-	U	Yes
bis(2-Chloroethoxy)methane	2.2	ug/l	1	-	U	Yes
bis(2-Chloroethyl)ether	2.2	ug/l	1	-	U	Yes
bis(2-Chloroisopropyl)ether	2.2	ug/l	1	-	U	Yes
4-Chlorophenyl phenyl ether	2.2	ug/l	1	-	U	Yes
2,4-Dinitrotoluene	1.1	ug/l	1	-	U	Yes
2,6-Dinitrotoluene	1.1	ug/l	1	-	U	Yes
3,3'-Dichlorobenzidine	2.2	ug/l	1	-	U	Yes
1,4-Dioxane	1.1	ug/l	1	-	U	Yes
Dibenzofuran	5.6	ug/l	1	-	U	Yes
Di-n-butyl phthalate	2.2	ug/l	1	-	U	Yes
Di-n-octyl phthalate	2.2	ug/l	1	_	U	Yes
Diethyl phthalate	2.2	ug/l	1	-	U	Yes
Dimethyl phthalate	2.2	ug/l	1	_	U	Yes
bis (2-Ethylhexyl) phthalate	2.2	ug/l	1	-	UJ	Yes
Fluoranthene	1.1	ug/l	1	_	U	Yes

Fluorene	1.1	ug/l	1	-	U	Yes			
Hexachlorobenzene	1.1	ug/l	1	-	U	Yes			
Hexachlorobutadiene	1.1	ug/l	1	-	U	Yes			
Hexachlorocyclopentadiene	11	ug/l	1	-	U	Yes			
Hexachloroethane	2.2	ug/l	1	-	U	Yes			
Indeno(1,2,3-cd)pyrene	1.1	ug/l	1	-	U	Yes			
Isophorone	2.2	ug/l	1	-	U	Yes			
1-Methylnaphthalene	1.1	ug/l	1	-	U	Yes			
2-Methylnaphthalene	1.1	ug/l	1	-	U	Yes			
2-Nitroaniline	5.6	ug/l	1	-	U	Yes			
3-Nitroaniline	5.6	ug/l	1	-	U	Yes			
4-Nitroaniline	5.6	ug/l	1	-	U	Yes			
Naphthalene	1.1	ug/l	1	-	U	Yes			
Nitrobenzene	2.2	ug/l	1	-	U	Yes			
N-Nitroso-di-n-propylamine	2.2	ug/l	1	-	U	Yes			
Nitrosodiphenylamine	5.6	ug/l	1	-	U	Yes			
Phenanthrene	1.1	ug/l	1	-	U	Yes			
Pyrene	1.1	ug/l	1	-	U	Yes			
1,2,4,5-Tetrachlorobenzene	2.2	ug/l	1	-	U	Yes			
145TUOD 00TOD (0114)									
METHOD: 8	•	•	4			V			
Benzo(a)pyrene	0.056	ug/l	1	-	U	Yes			
Dibenzo(a,h)anthracene	0.11	ug/l	1	-	U	Yes			

Sample location: BMSMC, Humacao, PR

Sampling date: 1/25/2017

Matrix: AQ - Field Blank Soil

MFTHOD: 8270D

WILTHOD.						
Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
2-Chlorophenol	5.5	ug/l	1	-	U	Yes
4-Chloro-3-methyl phenol	5.5	ug/l	1	-	U	Yes
2,4-Dichlorophenol	2.2	ug/l	1	-	U	Yes
2,4-Dimethylphenol	5.5	ug/l	1	-	U	Yes
2,4-Dinitrophenol	11	ug/l	1	-	U	Yes

4,6-Dinitro-o-cresol	5.5	ug/l	1	-	U	Yes
2-Methylphenol	2.2	ug/l	1	-	U	Yes
3&4-Methylphenol	2.2	ug/l	1	-	U	Yes
2-Nitrophenol	5.5	ug/l	1	=	U	Yes
4-Nitrophenol	11	ug/l	1	-	U	Yes
Pentachlorophenol	4.4	ug/l	1	-	U	Yes
Phenol	2.2	ug/l	1	-	UJ	Yes
2,3,4,6-Tetrachlorophenol	5.5	ug/l	1	-	U	Yes
2,4,5-Trichlorophenol	5.5	ug/l	1	-	U	Yes
2,4,6-Trichlorophenol	5.5	ug/l	1	-	U	Yes
Acenaphthene	1.1	ug/l	1	-	U	Yes
Acenaphthylene	1.1	ug/l	1	-	U	Yes
Acetophenone	2.2	ug/l	1	-	U	Yes
Anthracene	1.1	ug/l	1	-	U	Yes
Atrazine	2.2	ug/l	1	-	UJ	Yes
Benzaldehyde	5.5	ug/l	1	-	U	Yes
Benzo(a)anthracene	1.1	ug/l	1	-	U	Yes
Benzo(a)pyrene	1.1	ug/l	1	-	U	Yes
Benzo(b)fluoranthene	1.1	ug/l	1	_	U	Yes
Benzo(g,h,i)perylene	1.1	ug/l	1	=	U	Yes
Benzo(k)fluoranthene	1.1	ug/l	1	_	U	Yes
4-Bromophenyl phenyl ether	1.1	ug/l	1	-	U	Yes
Butyl benzyl phthalate	2.2	ug/l	1	=	U	Yes
1,1'-Biphenyl	1.1	ug/l	1	-	U	Yes
2-Chloronaphthalene	2.2	ug/l	1	-	U	Yes
4-Chloroaniline	5.5	ug/l	1	-	U	Yes
Carbazole	1.1	ug/l	1	-	U	Yes
Caprolactam	2.2	ug/l	1	-	U	Yes
Chrysene	1.1	ug/l	1	-	U	Yes
bis(2-Chloroethoxy)methane	2.2	ug/l	1	-	U	Yes
bis(2-Chloroethyl)ether	2.2	ug/l	1	-	U	Yes
bis(2-Chloroisopropyl)ether	2.2	ug/l	1	-	U	Yes
4-Chlorophenyl phenyl ether	2.2	ug/l	1	-	U	Yes
2,4-Dinitrotoluene	1.1	ug/l	1	-	U	Yes
2,6-Dinitrotoluene	1.1	ug/l	1	-	U	Yes
3,3'-Dichlorobenzidine	2.2	ug/l	1	_	U	Yes
1,4-Dioxane	1.1	ug/l	1	_	U	Yes
Dibenzofuran	5.5	ug/l	1	_	U	Yes
Di-n-butyl phthalate	2.2	ug/l	1	=	U	Yes
Di-n-octyl phthalate	2.2	ug/l	1	-	U	Yes
Diethyl phthalate	2.2	ug/l	1	-	U	Yes
Dimethyl phthalate	2.2	ug/l	1	=	U	Yes
bis(2-Ethylhexyl)phthalate	2.2	ug/l	1	_	UJ	Yes
Fluoranthene	1.1	ug/l	1	_	U	Yes
		-				

Fluorene	1.1	ug/l	1	-	U	Yes
Hexachlorobenzene	1.1	ug/l	1	-	U	Yes
Hexachlorobutadiene	1.1	ug/l	1	-	U	Yes
Hexachlorocyclopentadiene	11	ug/l	1	-	U	Yes
Hexachloroethane	2.2	ug/l	1	-	U	Yes
Indeno(1,2,3-cd)pyrene	1.1	ug/l	1	-	U	Yes
Isophorone	2.2	ug/l	1	-	U	Yes
1-Methylnaphthalene	1.1	ug/l	1	-	U	Yes
2-Methylnaphthalene	1.1	ug/l	1	-	U	Yes
2-Nitroaniline	5.5	ug/l	1	-	U	Yes
3-Nitroaniline	5.5	ug/l	1	-	U	Yes
4-Nitroaniline	5.5	ug/l	1	-	U	Yes
Naphthalene	1.1	ug/l	1	-	U	Yes
Nitrobenzene	1.1	ug/l	1	-	U	Yes
N-Nitroso-di-n-propylamine	2.2	ug/l	1	-	U	Yes
Nitrosodiphenylamine	2.2	ug/l	1	-	U	Yes
Phenanthrene	1.1	ug/l	1	-	U	Yes
Pyrene	1.1	ug/l	1	-	U	Yes
1,2,4,5-Tetrachlorobenzene	2.2	ug/l	1	-	U	Yes
		-1				
	8270D (SIN	•				
Benzo(a)pyrene	0.055	ug/kg	1	-	U	Yes
Dibenzo(a,h)anthracene	0.11	ug/kg	1	-	U	Yes

	Project Number:_JC36373
	Date:January_25,_2017
	Shipping Date:January_26,_2017
	EPA Region:2
REVIEW OF SEMIVOLATILE	DRGANIC PACKAGE
The following guidelines for evaluating volatile orgalidation actions. This document will assist the remake more informed decision and in better serving results were assessed according to USEPA data following order of precedence: EPA Hazardous V 2015 –Revision 0. Semivolatile Data Validation. The Q on the data review worksheets are from the prima noted.	eviewer in using professional judgment to g the needs of the data users. The sample a validation guidance documents in the Vaste Support Section, SOP HW-35A, July C criteria and data validation actions listed
The hardcopied (laboratory name) _Accutest	
Lab. Project/SDG No.:JC36373 No. of Samples:10_SIM/10_SCAN	Sample matrix:Soil
Trip blank No.:	
Field blank No.:JC36373-10	
Equipment blank No.:JC36373-9	
Field duplicate No.:JC36373-4/JC36373-5	
X Data Completeness	X Laboratory Control Spikes
X Bala completeness X Holding Times	X Eaboratory Control Spikes
X GC/MS Tuning	X Calibrations
X Internal Standard Performance	X Compound Identifications
X Blanks	X Compound Quantitation
X Surrogate Recoveries	X Quantitation Limits
X Matrix Spike/Matrix Spike Duplicate	qualitation Elimino
_Overall Comments:_SVOCs_TCL_special_list_analyzed _analyzed_by_method_SW846-8270D_(SIM)	
Definition of Qualifiers:	
J- Estimated results	
U- Compound not detected	
R- Rejected data	
UJ- Estimated nondetect	
Reviewer: / / / / / / / / / / / / / / / / / / /	

DATA COMPLETENESS

MISSING INFORMATION	DATE LAB. CONTACTED	DATE RECEIVED
	4	
0 872		
100	_	
X		
		×
		<u> </u>
		7

All criteria were met_	X	
Criteria were not met		
and/or see below		

HOLDING TIMES

The objective of this parameter is to ascertain the validity of the results based on the holding time of the sample from time of collection to the time of analysis.

Complete table for all samples and note the analysis and/or preservation not within criteria

SAMPLE ID	DATE	DATE	рН	ACTION	
	SAMPLED	EXTRACTED/ANALYZED			
JC36373-2	01/25/17	02/11/17	-	Extracted outside holding time for surrogates recoveries confirmation. No action taken, professional judgment.	
All samples extracted and analyzed within method recommended holding time except for the cases described in this document. Sample preservation appropriate.					

Cooler temperature (Criteria: 4 ± 2 °C):	3.6°C
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Actions

Results will be qualified based on the criteria of the following Table:

Table 1. Holding Time Actions for Semivolatile Analyses

		Ing Time Actions for Semivo	· · · · · · · · · · · · · · · · · · ·	tion
Matrix	Preserved	Criteria	Detected Associated Compounds	Non-Detected Associated Compounds
	No	≤7 days (for extraction) ≤40 days (for analysis)	Use profession	onal judgment
	No	> 7 days (for extraction) > 40 days (for analysis)	J	Use professional judgment
Aqueous	Yes	≤ 7 days (for extraction) ≤ 40 days (for analysis)	No qualification	
	Yes	> 7 days (for extraction) > 40 days (for analysis)	J	υJ
	Yes/No	Grossly Exceeded	J	UJ or R
	No	≤ 14 days (for extraction) ≤ 40 days (for analysis)	Use professi	onal judgment
Non-Aqueous	No	> 14 days (for extraction) > 40 days (for analysis)	J	Use professional judgment
	Yes	≤ 14 days (for extraction) ≤ 40 days (for analysis)	No qualification	
	Yes	> 14 days (for extraction) > 40 days (for analysis)	n) 1 (n)	
	Yes/No	Grossly Exceeded	J	UJ or R

All criteria were met _	X
Criteria were not met see below.	

GC/MS TUNING

The assessment of the tuning results is to determine if the sample instrumentation is within the standard tuning QC limits

- _X__ The DFTPP performance results were reviewed and found to be within the specified criteria.
- _X__ DFTPP tuning was performed for every 12 hours of sample analysis.

If no, use professional judgment to determine whether the associated data should be accepted, qualified or rejected.

Notes: These requirements do not apply when samples are analyzed by the Selected Ion Monitoring (SIM) technique.

All mass spectrometer conditions must be identical to those used during the sample analysis. Background subtraction actions resulting in spectral distortion are unacceptable

Notes: No data should be qualified based of DFTPP failure.

The requirement to analyze the instrument performance check solution is optional when analysis of PAHs/pentachlorophenol is to be performed by the SIM technique.

List the		samples	affected	

Actions:

- 1. If sample are analyzed without a preceding valid instrument performance check or are analyzed 12 hours after the Instrument Performance Check, qualify all data in those samples as unusable (R).
- 2. If ion abundance criteria are not met, use professional judgment to determine to what extent the data may be utilized.
- 3. State in the Data Review Narrative, decisions to use analytical data associated with DFTPP instrument performance checks not meeting the contract requirements.
- 4. Use professional judgment to determine if associated data should be qualified based on the spectrum of the mass calibration compounds.

All criteria were met _	_X	_
Criteria were not met		
and/or see below		

INITIAL CALIBRATION VERIFICATION

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing and maintaining acceptable quantitative data.

Instrument ID numbers:GCMS2P Matrix/Level:Aqueous/low					GCMS6P		
Date of instrume Matrix/Le	nt ID nu	mbers:_	GCMS4M				
DATE	LAB ID#	FILE	CRITERIA OUT RFs, %RSD, %D, r	COMPOUND	SAMPLES AFFECTED		
Initia	l and init	ial calib	ration verification mee	ts the method and	guidance validation document	_	

Note: Instruments GCMS3M; and GCM3E were also employed for running QC samples for this data package. QC samples not validated.

performance criteria.

Actions:

Qualify the initial calibration analytes listed in Table 2 using the following criteria:

Table 3. Initial Calibration Actions for Semivolatile Analysis

Criteria	Action		
Criteria	Detect	Non-detect	
Initial Calibration not performed at specified frequency and sequence	Use professional judgment	Use professional judgment	
Initial Calibration not performed at the specified		K	
concentrations		UJ	
RRF < Minimum RRF in Table 2 for target	Use professional judgment	R	
analyte	J+ or R	K	
RRF ≥ Minimum RRF in Table 2 for target analyte	No qualification	No qualification	
%RSD > Maximum %RSD in Table 2 for target analyte	J	Use professional judgment	
%RSD ≤ Maximum %RSD in Table 2 for target analyte	No qualification	No qualification	

Initial Calibration

Table 2. RRF, %RSD, and %D Acceptance Criteria in Initial Calibration and CCV for Semivolatile Analysis

Analyte	Minimum RRF	Maximum %RSD	Opening Maximum %D¹	Opening Maximum %D¹
1,4-Dioxane	0.010	40.0	± 40.0	± 50.0
Benzaldehyde	0.100	40.0	± 40.0	± 50.0
Phenol	0.080	20.0	±20.0	±25.0
Bis(2-chloroethyl)ether	0.100	20.0	±20.0	±25.0
2-Chlorophenol	0.200	20.0	±20.0	± 25.0
2-Methylphenol	0.010	20.0	±20.0	±25.0
3-Methylphenol	0.010	20.0	±20.0	±25.0
2,2'-Oxybis-(1-chloropropane)	0.010	20.0	±25.0	±50.0
Acetophenone	0.060	20.0	±20.0	±25.0
4-Methylphenol	0.010	20.0	±20.0	±25.0
N-Nitroso-di-n-propylamine	0.080	20.0	±25.0	±25.0
Hexachloroethane	0.100	20.0	±20.0	±25.0
Nitrobenzene	0.090	20.0	±20.0	±25.0
Isophorone	0.100	20.0	±20.0	±25.0
2-Nitrophenol	0.060	20.0	±20.0	±25.0
2,4-Dimethylphenol	0.050	20.0	±25.0	± 50.0
Bis(2-chloroethoxy)methane	0.080	20.0	±20.0	±25.0
2,4-Dichlorophenol	0.060	20.0	±20.0	±25.0
Naphthalene	0.200	20.0	± 20.0	±25.0
4-Chloroaniline	0.010	40.0	± 40.0	± 50.0
lexachlorobutadiene	0.040	20.0	± 20.0	±25.0
Caprolactam	0.010	40.0	± 30.0	± 50.0
4-Chloro-3-methylphenol	0.040	20.0	±20.0	±25.0
2-Methylnaphthalene	0.100	20.0	± 20.0	±25.0
lexachlorocyclopentadiene	0.010	40.0	± 40.0	±50.0
2,4,6-Trichlorophenol	0.090	20.0	± 20.0	±25.0
2,4,5-Trichlorophenol	0.100	20.0	± 20.0	±25.0
I, I'-Biphenyl	0.200	20.0	± 20.0	±25.0

Analyte	Minimum RRF	Maximum %RSD	Opening Maximum %D ¹	Opening Maximum %D ¹
2-Chloronaphthalene	0.300	20.0	±20.0	± 25.0
2-Nitroaniline	0.060	20.0	±25.0	± 25.0
Dimethylphthalate	0.300	20.0	±25.0	± 25.0
2,6-Dinitrotoluene	0.080	20.0	±20.0	± 25.0
Acenaphthylene	0.400	20.0	± 20.0	± 25.0
3-Nitroaniline	0.010	20.0	±25.0	± 50.0
Acenaphthene	0.200	20.0	± 20.0	±25.0
2,4-Dinitrophenol	0.010	40.0	± 50.0	± 50.0
4-Nitrophenol	0.010	40.0	± 40.0	± 50.0
Dibenzofuran	0.300	20.0	± 20.0	±25.0
2,4-Dinitrotoluene	0.070	20.0	±20.0	±25.0
Diethylphthalate	0.300	20.0	±20.0	±25.0
1,2,4,5-Tetrachlorobenzene	0.100	20.0	±20.0	±25,0
4-Chlorophenyl-phenylether	0.100	20.0	±20.0	±25.0
Fluorene	0.200	20.0	± 20.0	±25.0
4-Nitroaniline	0.010	40.0	± 40.0	±50.0
4,6-Dinitro-2-methylphenol	0.010	40.0	±30.0	± 50.0
4-Bromophenyl-phenyl ether	0.070	20.0	±20.0	±25.0
N-Nitrosodiphenylamine	0.100	20.0	±20.0	±25.0
Hexachlorobenzene	0.050	20.0	±20.0	±25.0
Atrazine	0.010	40.0	±25.0	± 50.0
Pentachlorophenol	0.010	40.0	± 40.0	± 50.0
Phenanthrene	0.200	20.0	±20.0	±25.0
Anthracene	0.200	20.0	±20.0	± 25.0
Carbazole	0.050	20.0	± 20.0	± 25.0
Di-n-butylphthalate	0.500	20.0	± 20.0	±25.0
Fluoranthene	0.100	20.0	± 20.0	±25.0
Pyrene	0.400	20.0	±25.0	± 50.0
Butylbenzylphthalate	0.100	20.0	±25.0	± 50.0

Analyte	Minimum RRF	Maximum %RSD	Opening Maximum %D ¹	Opening Maximum %D¹
3,3'-Dichlorobenzidine	0.010	40.0	± 40.0	± 50.0
Benzo(a)anthracene	0.300	20.0	±20.0	±25.0
Chrysene	0.200	20.0	±20.0	± 50.0
Bis(2-ethylhexyl) phthalate	0.200	20.0	±25.0	± 50.0
Di-n-octylphthalate	0.010	40.0	± 40.0	± 50.0
Benzo(b)fluoranthene	0.010	20.0	±25.0	± 50.0
Benzo(k)fluoranthene	0.010	20.0	±25.0	± 50.0
Benzo(a)pyrene	0.010	20.0	±20.0	± 50.0
Indeno(1,2,3-cd)pyrene	0.010	20.0	±25.0	± 50.0
Dibenzo(a,h)anthracene	0.010	20.0	±25.0	± 50.0
Benzo(g,h,i)perylene	0.010	20.0	±30.0	± 50.0
2,3,4,6-Tetrachlorophenol	0.040	20.0	±20.0	± 50.0
Naphthalene	0.600	20.0	±25.0	±25.0
2-Methylnaphthalene	0.300	20.0	±20.0	±25.0
Acenaphthylene	0.900	20.0	±20.0	±25.0
Acenaphthene	0.500	20.0	±20.0	±25.0
Fluorene	0.700	20.0	±25.0	± 50.0
Phenanthrene	0.300	20.0	±25.0	± 50.0
Anthracene	0.400	20.0	± 25.0	± 50.0
Fluoranthene	0.400	20.0	±25.0	± 50.0
Pyrene	0.500	20.0	±30.0	±50.0
Benzo(a)anthracene	0.400	20.0	±25.0	± 50.0
Chyrsene	0.400	20.0	±25.0	± 50.0
Benzo(b)fluoranthene	0.100	20.0	±30.0	± 50.0
Benzo(k)fluoranthene	0.100	20.0	± 30.0	±50.0
Benzo(a)pyrene	0.100	20.0	±25.0	± 50.0
Indeno(1,2,3-cd)pyrene	0.100	20.0	± 40.0	± 50.0
Dibenzo(a,h)anthracene	0.010	25.0	± 40.0	± 50.0
Benzo(g,h,i)perylene	0.020	25.0	±40.0	± 50.0

Pentachlorophenol	0.010	40.0	± 50.0	± 50.0	
Deuterated Monitoring Compounds					

Analyte	Minimum RRF	Maximum %RSD	Opening Maximum %D ¹	Closing Maximum %D
1,4-Dioxane-d ₈	0.010	20.0	±25.0	± 50.0
Phenol-d ₅	0.010	20.0	±25.0	±25.0
Bis-(2-chloroethyl)ether-d ₈	0.100	20.0	±20.0	±25.0
2-Chlorophenol-d₄	0.200	20.0	±20.0	±25.0
4-Methylphenol-d ₈	0.010	20.0	±20.0	±25.0
4-Chloroaniline-d ₄	0.010	40.0	± 40.0	±50.0
Nitrobenzene-d ₅	0.050	20.0	± 20.0	±25.0
2-Nitrophenol-d ₄	0.050	20.0	±20.0	±25.0
2,4-Dichlorophenol-d ₃	0.060	20.0	±20.0	±25.0
Dimethylphthalate-d ₆	0.300	20.0	±20.0	±25.0
Acenaphthylene-d ₈	0.400	20.0	±20.0	±25.0
4-Nitrophenol-d ₄	0.010	40.0	± 40.0	± 50.0
Fluorene-d ₁₀	0.100	20.0	±20.0	±25.0
4,6-Dinitro-2-methylphenol-d₂	0.010	40.0	±30.0	± 50.0
Anthracene-d ₁₀	0.300	20.0	± 20.0	±25.0
Pyrene-d ₁₀	0.300	20.0	±25.0	± 50.0
Benzo(a)pyrene-d ₁₂	0.010	20.0	± 20.0	± 50.0
Fluoranthene-d ₁₀ (SIM)	0.400	20.0	±25.0	± 50.0
2-Methylnaphthalene-d ₁₀ (SIM)	0.300	20.0	±20.0	± 25.0

¹ If a closing CCV is acting as an opening CCV, all target analytes must meet the requirements for an opening CCV.

Note: If analysis by SIM technique is requested for PAH/pentachlorophenols, calibration standards analyzed at 0.10, 0.20, 0.40, 0.80, and 1.0 ng/uL for each target compound of interest and the associated DMCs. Pentachlorophenol will require only a four point initial calibration at 0.20, 0.40, 0.80, and 1.0 ng/uL.

All criteria were met _	
Criteria were not met	
and/or see below	_X

CONTINUING CALIBRATION VERIFICATION

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing and maintaining acceptable quantitative data.

Date of initial calibration:01/1	0-11/17_(SCAN)	12/14/16_(SIM)
Date of initial calibration verification	(ICV):_01/11/17	_12/14/16;_12/19/16
	eation (CCV):01/31/17	
	• • •	02/02/17
Date of closing CCV:		<u> </u>
Instrument ID numbers:	GCMS2P	GCMS4M
Matrix/Level:	Aqueous/low	Aqueous/low
Date of initial calibration:	02/07/17_(SCAN)	
Date of initial calibration verification		
	ation (CCV):02/08/17;_02/10/17_	
Date of closing CCV:		
Instrument ID numbers:	GCMS6P	
Matrix/Level:	Aqueous/low	

DATE	LAB FILE ID#	CRITERIA OUT RFs, %RSD, <u>%D</u> ,	COMPOUND	SAMPLES AFFECTED	
GCMS2P		<u> </u>		·	
01/31/17	cc2898-25	22.7	Phenol	JC36373-9; -10	
5		-24.6	n-Nitroso-di-n-propylamine*		
		21.8	bis(2-chloroethoxy)methane		
		20.2	Butylbenzylphthalate*		
		26.0	bis(2-ethylhexyl)phthalate		
01/31/17	cc2899-25	-21.1	Atrazine		
GCMS6P					
02/10/17	cc1599-25	-24.7	4-nitrophenol*	JC36373-2	
		-24.7	4,6-dinitro-2-methylphenol*	(confirmation run)	

Note: Initial and continuing calibration verifications meet the method and guidance document required performance criteria except for the cases described in this document. Results qualified as estimated (J or UJ) in affected samples.

* % difference outside was method performance criteria but within the guidance document performance criteria. No action taken.

No action taken for QC samples.

No closing calibration verification included in data package. No action taken, professional judgment.

Actions:

Notes: Verify that the CCV is run at the required frequency (an opening and closing CCV must be run within 12-hour period).

All DMCs must meet the RRF values given in Table 2. No qualification of the data is necessary on DMCs RRF and %RSD/%D alone. Use professional judgment to evaluate DMCs and %RSD/%D data in conjunction with DMCs recoveries to determine the need for qualification of the data.

Qualify the initial calibration analytes listed in Table 2 using the following criteria in the CCVs:

Table 4. CCV Actions for Semivolatile Analysis

Criteria for Opening CCV	Criteria for Closing CCV	Action		
Criteria for Opening CCV	Criteria for Closing CCV	Detect	Non-detect	
CCV not performed at required frequency and sequence	CCV not performed at required frequency	Use professional judgment R	Use professional judgment R	
CCV not performed at specified concentration	CCV not performed at specified concentration	Use professional judgment	Use professional judgment	
RRF < Minimum RRF in Table 2 for target analyte	RRF < Minimum RRF in Table 2 for target analyte	Use professional judgment J or R	R	
RRF ≥ Minimum RRF in Table 2 for target analyte	RRF ≥ Minimum RRF in Table 2 for target analyte	No qualification	No qualification	
%D outside the Opening Maximum %D limits in Table 2 for target analyte	%D outside the Closing Maximum %D limits in Table 2 for target analyte	J	Ωĵ	
%D within the inclusive Opening Maximum %D limits in Table 2 for target analyte	%D within the inclusive Closing Maximum %D limits in Table 2 for target analyte	No qualification	No qualification	

All criteria were metX	
Criteria were not met	
and/or see below	

BLANK ANALYSIS RESULTS (Sections 1 & 2)

The assessment of the blank analysis results is to determine the existence and magnitude of contamination problems. The criteria for evaluation of blanks apply only to blanks associated with the samples, including trip, equipment, and laboratory blanks. If problems with any blanks exist, all data associated with the case must be carefully evaluated to determine whether or not there is an inherent variability in the data for the case, or if the problem is an isolated occurrence not affecting other data.

List the contamination in the blanks below. High and low levels blanks must be treated separately.

Notes: The concentration of non-target compounds in all blanks must be less than or equal to 10 ug/L.

The concentration of target compounds in all blanks must be less than its CRQL listed in the method.

Samples taken from a drinking water tap do not have and associated field blank.

Laboratory blanks

Note:

DATE ANALYZED	LAB ID	LEVEL/ MATRIX	COMPOUND	CONCENTRATION UNITS
_No_target_ana	llytes_detected_	_in_method_bla	anks	
Field/Equipme	nt/Trip blank			
DATE ANALYZED	LAB ID	LEVEL/ MATRIX	COMPOUND	CONCENTRATION UNITS
_No_target_ana	lytes_detected_	_in_the_field/ed	quipment_blanks_analy:	zed_with_this_data_package
-				

13

All criteria were met _	_X
Criteria were not met	
and/or see below	

BLANK ANALYSIS RESULTS (Section 3)

Blank Actions

Qualify samples based on the criteria summarized in Table 5:

Table 5. Blank and TCLP/SPLP LEB Actions for Semivolatile Analysis

Blank Type	Blank Result	Sample Result	Action
	Detect	Non-detect	No qualification
	< CRQL	< CRQL	Report at CRQL and qualify as non-detect (U)
		≥ CRQL	Use professional judgment
		< CRQL	Report at CRQL and qualify as non-detect (U)
Method,	≥CRQL	≥ CRQL but < Blank Result	Report at sample results and qualify as non-detect (U) or as unusable (R)
TCLP/SPLP LEB, Field		≥ CRQL and ≥ Blank Result	Use professional judgment
	Grossly high	Detect	Report at sample results and qualify as unusable (R)
	TIC > 5.0 ug/L (water) or 0.0050 mg/L (TCLP leachate) or TIC > 170 ug/Kg (soil)	Detect	Use professional judgment

List samples qualified

CONTAMINATION SOURCE/LEVEL	COMPOUND	CONC/UNITS	AL/UNITS	SQL	AFFECTED SAMPLES
	,				

Matrix: Soil

All criteria were met
Criteria were not met
and/or see belowX

SURROGATE SPIKE RECOVERIES - DEUTERATED MONITORING COMPOUNDS (DMCs)

Laboratory performance of individual samples is established by evaluation of surrogate spike recoveries – deuterated monitoring compounds. All samples are spiked with surrogate compounds prior to sample analysis. The accuracy of the analysis is measured by the surrogate percent recovery. Since the effects of the sample matrix are frequently outside the control of the laboratory and may present relatively unique problems, the validation of data is frequently subjective and demands analytical experience and professional judgment.

Notes: Recoveries for DMCs in samples and blanks must be within the limits specified in Table 6.

The recovery limits for any of the compounds listed in Table 6 may be expanded at any time during the period of performance if USEPA determines that the limits are too restrictive.

If a DMC is not added in the samples and blanks or the concentrations of DMCs in the samples and blank not the specified, use professional judgment in qualifying the data.

Action Criteria Non-detect Detect %R < 10% (excluding DMCs with 10% as a lower J-R acceptance limit) $10\% \le \%R$ (excluding DMCs with 10% as a lower J-UJ acceptance limit) < Lower Acceptance Limit Lower Acceptance limit $\leq \%R \leq Upper$ Acceptance Limit No qualification No qualification %R > Upper Acceptance Limit No qualification

Table 7. DMC Actions for Semivolatile Analysis

List the percent recoveries (%Rs) which do not meet the criteria for DMCs (surrogate) recovery.

SAMPLE ID	SURROGATE COMPOUND	ACTION
	uired_criteria_in_all_samples_analyzed_except_fo _deuterated_surrogates_added_to_the_samples_a	

Note: All surrogate standards biased high in sample JC36373-2. Confirmed by re-extraction outside the holding time. Surrogates recovered within laboratory control limits in the confirmation run. No action taken, professional judgment.

Table 8. Semivolatile DMCs and the Associated Target Analytes

1,4-Dioxane-ds (DMC-1)	Phenol-d ₅ (DMC-2)	Bis(2-Chloroethyl) ether-d ₈
		(DMC-3)
1,4-Dioxane	Benzaldehyde	Bis(2-chloroethyl)ether
	Phenol	2,2'-Oxybis(1-chloropropane)
		Bis(2-chioroethoxy)methane
2-Chlorophenol-d4(DMC-4)	4-Methylphenol-d ₈ (DMC-5)	4-Chloroaniline-d ₄ (DMC-6)
2-Chlorophenol	2-Methylphenol	4-Chloroaniline
	3-Methylphenol	Hexachlorocyclopentadiene
	4-Methylphenol	Dichlorobenzidine
	2,4-Dimethylphenol	
Nitrobenzene-d ₅ (DMC-7)	2-Nitrophenol-d ₄ (DMC-8)	2,4-Dichlorophenol-d3(DMC-9)
Acetophenone	Isophorone	2,4-Dichlorophenol
N-Nitroso-di-n-propylamine	2-Nitrophenol	Hexachlorobutadiene
l-lexachloroethane		Hexachlorocyclopentadiene
Nitrobenzene		4-Chloro-3-methylphenol
2,6-Dinitrotoluene		2,4,6-Trichlorophenol
2,4-Dinitrotoluene		2,4,5-Trichlorophenol
N-Nitrosodiphenylamine		1,2,4,5-Tetrachlorobenzene
		*Pentachlorophenol
		2,3,4,6-Tetrachlorophenol
Dimethylphthalate-d ₆ (DMC-10)	Acenaphthylene-ds (DMC-11)	4-Nitrophenol-d. (DMC-12)
Caprolactam	*Naphthalene	2-Nitroaniline
1,1'-Biphenyl	*2-Methylnaphthalene	3-Nitroaniline
Dimethylphthalate	2-Chloronaphthalene	2,4-Dinitrophenol
Diethylphthalate	*Acenaphthylene	4-Nitrophenol
Di-n-butylphthalate	*Acenaphthene	4-Nitroaniline
Butylbenzylphthalate		
Bis(2-ethylhexyl) phthalate		
Di-n-octylphthalate		

Fluorene-d ₁₀ (DMC-13)	4,6-Dinitro-2-methylphenol-d ₂ (DMC-14)	Anthracene-d ₁₀ (DMC-15)
Dibenzofuran *Fluorene 4-Chlorophenyl-phenylether 4-Bromophenyl-phenylether Carbazole	4,6-Dinitro-2-methylphenol	Hexachlorobenzene Atrazine *Phenanthrene *Anthracene
Pyrene-d ₁₀ (DMC-16)	Benzo(a)pyrene-d ₁₂ (DMC-17)	
*Fluoranthene	3,3'-Dichlorobenzidine	
*Pyrene	*Benzo(b)fluoranthene	
*Benzo(a)anthracene	*Benzo(k)fluoranthene	
*Chrysene	*Benzo(a)pyrene	
	*Indeno(1,2,3-cd)pyrene	
	*Dibenzo(a,h)anthracene	
	*Benzo(g,h,i)perylene	

^{*}Included in optional Target Analyte List (TAL) of PAHs and PCP only.

Table 9. Semivolatile SIM DMCs and the Associated Target Analytes

Fluoranthene-d10 (DMC-1)	2-Methylnaphthalene-d10 (DMC-2)
Fluoranthene	Naphthalene
Pyrene	2-Methylnaphthalene
Benzo(a)anthracene	Acenaphthylene
Chrysene	Acenaphthene
Benzo(b)fluoranthene	Fluorene
Benzo(k)fluoranthene	Pentachlorophenol
Benzo(a)pyrene	Phenanthrene
Indeno(1,2,3-cd)pyrene	Anthracene
Dibenzo(a,h)anthracene	
Benzo(g,h,i)perylene	1

All criteria were met _		
Criteria were not met		
and/or see below	_X_	_

VII. A MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD)

This data is generated to determine long term precision and accuracy in the analytical method for various matrices. This data alone cannot be used to evaluate the precision and accuracy of individual samples. If any % R in the MS or MSD falls outside the designated range, the reviewer should determine if there are matrix effects, i.e. LCS data are within the QC limits but MS/MSD data are outside QC limit.

MS/MSD Recoveries and Precision Criteria

The laboratory should use one MS and a duplicate analysis of an unspiked field sample if target analytes are expected in the sample. If target analytes are not expected, MS/MSD should be analyzed.

NOTES:

Data for MS and MSDs will not be present unless requested by the Region. Notify the Contract Laboratory COR if a field or trip blank was used for the MS and MSD.

For a Matrix Spike that does not meet criteria, apply the action to only the field sample used to prepare the Matrix Spike sample. If it is clearly stated in the data validation materials that the samples were taken through incremental sampling or some other method guaranteeing the homogeneity of the sample group, then the entire sample group may be qualified.

List the %Rs, RPD of the compounds which do not meet the criteria.

The QC reported here applies to the following samples:	Method: SW846 8270D
Sample ID:JC36191-3_(SIM)	Matrix/Level:Aqueous
Sample ID:JC36191-1	Matrix/Level:Aqueous
Sample ID:JC36342-4_(SIM)	Matrix/Level:Soil
Sample ID:JC36373-4	Matrix/Level:Soil

The QC reported here applies to the following samples: JC36373-9, JC36373-10

Compound	JC3619 ug/l	91-1 Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
4,6-Dinitro-o-cres Benzaldehyde	sol ND ND		111 111	27.3 1530	25* a 1377* a		36.4 1860	33 1674* a	29 19	26-151/37 11-132/37

⁽a) Outside of in house control limits due to matrix interference.

^{* -} outside laboratory control limits

The QC reported here applies to the following samples: JC36373-9, JC36373-10

Compound	JC3619 ug/l	1-3 Q	Spike ug/l	MS ug/l	MS %	Spike ug/i	MSD ug/l	MSD %	RPD	Limits Rec/RPD
Benzo(a)pyrene Dibenzo(a,h)-	3.02		2.22	4.72	77	2.22	7.06	182* b	40* c	10-116/38
anthracene	0.521		2.22	2.45	72	2.22	4.01	142* b	48	10-116/48

Method: SW846 8270D SIM

The QC reported here applies to the following samples: Method: SW846 8270D BY SIM JC36373-1, JC36373-2, JC36373-3, JC36373-4, JC36373-5, JC36373-6, JC36373-7, JC36373-8

	JC3637	2-4	Spike	MS	MS	Spike	MSD	MSD		Limits
Compound	-33	Q	ug/kg	ug/kg	%	ug/kg	ug/kg	%	RPD	Rec/RPD
Benzo(a)pyrene	135		37.9	220	224* a	37.8	564	1134* a	88* b	18-188/44
Dibenzo(a,h)-										
anthracene	23.2		37.9	59.9	97	37.8	118	251* a	65* b	28-169/41

⁽a) Outside of in house control limits due to possible sample nonhomogeneity.

Note: MS/MSD % recovery and RPD within laboratory control limits except for the cases described in this document. Results apply to the unspiked sample; unspiked sample from another job. No qualification performed based on MS/MSD results.

- * QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.
- * If QC limits are not available, use limits of 70 130 %.

Actions:

QUALITY	%R < LL	%R > UL
Positive results	J	J
Nondetects results	R	Accept

MS/MSD criteria apply only to the unspiked sample, its dilutions, and the associated MS/MSD samples:

If the % R for the affected compounds were < LL (or 70 %), qualify positive results (J) and nondetects (UJ).

If the % R for the affected compounds were > UL (or 130 %), only qualify positive results (J). If 25 % or more of all MS/MSD %R were < LL (or 70 %) or if two or more MS/MSD %Rs were < 10%, qualify all positive results (J) and reject nondetects (R).

A separate worksheet should be used for each MS/MSD pair.

⁽b) Outside control limits due to matrix interference.

⁽c) Outside of in house control limits.

^{* -} outside laboratory control limits

⁽b) Analytical precision exceeds in-house control limits.

^{* -} outside laboratory control limits

All criteria were met _	Х	
Criteria were not met		
and/or see below		

INTERNAL STANDARD PERFORMANCE

The assessment of the internal standard (IS) parameter is used to assist the data reviewer in determining the condition of the analytical instrumentation.

List the internal standard area of samples which do not meet the criteria.

DATE	SAMPLE ID	IS OUT	IS AREA	ACCEPTABLE RANGE	ACTION
Internal area	meets the requ	uired criteria for b	atch samples corres	ponding to this data	package.

Action:

- If an internal standard area count for a sample or blank is greater than 213.0% of the area for the associated standard (opening CCV or mid-point standard from initial calibration) (see Table 10 below):
 - a. Qualify detects for compounds quantitated using that internal standard as estimated low (J-).
 - b. Do not qualify non-detected associated compounds.
- 2. If an internal standard area count for a sample or blank is less than 20.0% of the area for the associated standard (opening CCV or mid-point standard from initial calibration):
 - a. Qualify detects for compounds quantitated using that internal standard as estimated high (J+).
 - b. Qualify non-detected associated compounds as unusable (R).
- 3. If an internal standard area count for a sample or blank is greater than or equal to 50.0%, and less than or equal to 213% of the area for the associated standard opening CCV or mid-point standard from initial calibration, no qualification of the data is necessary.
- 4. If an internal standard RT varies by more than 10.0 seconds: Examine the chromatographic profile for that sample to determine if any false positives or negatives exist. For shifts of a large magnitude, the reviewer may consider partial or total rejection of the data for that sample fraction. Detects should not need to be qualified as unusable (R) if the mass spectral criteria are met.
- 5. If an internal standard RT varies by less than or equal to 10.0 seconds, no qualification of the data is necessary.

Note:

Inform the Contract Laboratory Program Project Officer (CLP PO) if the internal standard performance criteria are grossly exceeded. Note in the Data Review Narrative potential effects on the data resulting from unacceptable internal standard performance.

State in the Data Review Narrative if the required internal standard compounds are not added to a sample or blank or if the required internal standard compound is not analyzed at the specified concentration.

Actions:

Table 10. Internal Standard Actions for Semivolatile Analysis

Criteria	Action		
Спіспа	Detect	Non-detect	
Area response < 20% of the opening CCV or mid-point standard CS3 from ICAL	J+	e R	
20% ≤ Area response < 50% of the opening CCV or mid-point standard CS3 from ICAL	J+	บม	
50% ≤ Area response ≤ 200% of the opening CCV or mid-point standard CS3 from ICAL	No qualification	No qualification	
Area response > 200% of the opening CCV or mid-point standard CS3 from ICAL	J-	No qualification	
RT shift between sample/blank and opening CCV or mid-point standard CS3 from ICAL > 10.0 seconds	R	R	
RT shift between sample/blank and opening CCV or mid-point standard CS3 from ICAL < 10.0 seconds	No qualification	No qualification	

		All criteria were metX Criteria were not met and/or see below
TARGET COMP	OUND IDENTIFICATION	
Criteria:		
		ounds within ±0.06 RRT units of the standard CV) or mid-point standard from the initial Yes? or No?
List compounds	not meeting the criteria described above:	
Sample ID	Compounds	Actions
spectrum from (calibration)] mus a. b.	the associated calibration standard (ope t match according to the following criteria: All ions present in the standard mass spe must be present in the sample spectrum. The relative intensities of these ions must sample spectra (e.g., for an ion with an a the corresponding sample ion abundance lons present at greater than 10% in the s	aboratory-generated standard [i.e., the mass ming CCV or mid-point standard from initial ectrum at a relative intensity greater than 10% agree within ±20% between the standard and abundance of 50% in the standard spectrum,
List compounds	not meeting the criteria described above:	
Sample ID	Compounds	Actions

_ldentified_compounds_meet_the_required_criteria____

Action:

- 1. The application of qualitative criteria for GC/MS analysis of target compounds requires professional judgment. It is up to the reviewer's discretion to obtain additional information from the laboratory. If it is determined that incorrect identifications were made, qualify all such data as unusable (R).
- 2. Use professional judgment to qualify the data if it is determined that cross-contamination has occurred.
- Note in the Data Review Narrative any changes made to the reported compounds or concerns regarding target compound identifications. Note, for Contract Laboratory COR action, the necessity for numerous or significant changes.

TENTATIVELY IDENTIFIED COMPOUNDS (TICS)

NOTE: Tentatively identified compounds should only be evaluated when requested by a party from outside of the Hazardous Waste Support Section (HWSS).

L	st	T	lCs

Sample ID	Compound	Sample ID	Compound

Action:

- 1. Qualify all TIC results for which there is presumptive evidence of a match (e.g. greater than or equal to 85% match) as tentatively identified (NJ), with approximated concentrations. TICs labeled "unknown" are qualified as estimated (J).
- 2. General actions related to the review of TIC results are as follows:
 - a. If it is determined that a tentative identification of a non-target compound is unacceptable, change the tentative identification to "unknown" or another appropriate identification, and qualify the result as estimated (J).
 - b. If all contractually-required peaks were not library searched and quantitated, the Region's designated representative may request these data from the laboratory.
- 3. In deciding whether a library search result for a TIC represents a reasonable identification, use professional judgment. If there is more than one possible match, report the result as "either compound X or compound Y". If there is a lack of isomer specificity, change the TIC result to a nonspecific isomer result (e.g., 1,3,5-trimethyl benzene to trimethyl benzene isomer) or to a compound class (e.g., 2-methyl, 3-ethyl benzene to a substituted aromatic compound).
- 4. The reviewer may elect to report all similar compounds as a total (e.g., all alkanes may be summarized and reported as total hydrocarbons).

- 5. Target compounds from other fractions and suspected laboratory contaminants should be marked as "non-reportable".
- 6. Other Case factors may influence TIC judgments. If a sample TIC match is poor, but other samples have a TIC with a valid library match, similar RRT, and the same ions, infer identification information from the other sample TIC results.
- 7. Note in the Data Review Narrative any changes made to the reported data or any concerns regarding TIC identifications.
- 8. Note, for Contract Laboratory COR action, failure to properly evaluate and report TICs

All criteria were met>	\subseteq
Criteria were not met	
and/or see below	

SAMPLE QUANTITATION AND REPORTED CONTRACT REQUIRED QUANTITATION LIMITS (CRQLS)

Action:

- 1. When a sample is analyzed at more than one dilution, the lower CRQL are used unless a QC exceedance dictates the use of higher CRQLs from the diluted sample. Samples reported with an "E" qualifier should be reported from the diluted sample.
- 2. If any discrepancies are found, the Region's designated representative may contact the laboratory to obtain additional information that could resolve any differences. If a discrepancy remains unresolved, the reviewer must use professional judgment to decide which value is the most accurate. Under these circumstances, the reviewer may determine that qualification of data is warranted. Note in the Data Review Narrative a description of the reasons for data qualification and the qualification that is applied to the data.
- 3. For non-aqueous samples, if the solids is less than 10.0%, use professional judgment for both detects and non-detects. If the percent solid for a soil sample is greater than or equal to 10.0% and less than 30.0%, use professional judgment to qualify detects and non-detects. If the percent solid for a soil sample is greater than or equal to 30.0%, detects and non-detects should not be qualified (see Table 11).
- 4. Note, for Contract Laboratory COR action, numerous or significant failures to accurately quantify the target compounds or to properly evaluate and adjust CRQLs.
- 5. Results between MDL and CRQL should be qualified as estimated "J".
- 6. Results < MDL should be reported at the CRQL and qualified "U". MDLs themselves should not be reported.

Table 11. Percent Solids Actions for Semivolatile Analysis for Non-Aqueous Samples

Criteria	Action		
Cineria	Detects Non-detect		
%Solids < 10.0%	Use professional judgment	Use professional judgment	
10.0% ≤ %Solids ≤ 30.0%	Use professional judgment	Use professional judgment	
%Solids > 30.0%	No qualification	No qualification	

SAMPLE QUANTITATION

The sample quantitation evaluation is to verify laboratory quantitation results. In the space below, please show a minimum of one sample calculation:

QUANTITATION LIMITS

A. Dilution performed

SAMPLE ID	DILUTION FACTOR	REASON FOR DILUTION
2003		
To the same of the		

All criteria were met _	X
Criteria were not met	50° = =0°
and/or see below	

FIELD DUPLICATE PRECISION

Sample IDs:JC36373-4/JC36373-5	Matrix:	_Soil
--------------------------------	---------	-------

Field duplicates samples may be taken and analyzed as an indication of overall precision. These analyses measure both field and lab precision; therefore, the results may have more variability than laboratory duplicates which only laboratory performance. It is also expected that soil duplicate results will have a greater variance than water matrices due to difficulties associated with collecting identical field duplicate samples.

The project QAPP should be reviewed for project-specific information.

Suggested criteria: if large RPD (> 50 %) is observed, confirm identification of the samples and note differences. If both samples and duplicate are <5 SQL, the RPD criteria is doubled.

COMPOUND	SQL ug/L	SAMPLE CONC. (ug/l)	DUPLICATE CONC. (ug/l)	RPD	ACTION			
Field duplicate analyzed as part of this data package. RPD within the required guidance document criteria < 50 % for detected target analytes above 5 SQL.								

All criteria were met _	_X_	_
Criteria were not met		
and/or see below	_	

OTHER ISSUES

	•		performance during simple analysis:
Sample====	e ID ========	Comments	Actions
		20.	
	190		
Action:			
during	sample analyses		nined that system performance has degraded y Program COR any action as a result of cted the data.
В.	Overall Assessme	ent of Data	
List sa	mples qualified ba	sed on other issues:	
Sample		Comments	Actions
			_dataResults_are_valid_and_can_be_used n_below
Note:	either was not		analyzed on 12/28/16. The affected samples was left or extracted outside the method essional judgment.

Action:

- 1. Use professional judgment to determine if there is any need to qualify data which were not qualified based on the Quality Control (QC) criteria previously discussed.
- 2. Write a brief narrative to give the user an indication of the analytical limitations of the data. Inform the Contract Laboratory COR the action, any inconsistency of the data with the Sample Delivery Group (SDG) Narrative. If sufficient information on the intended use and required quality of the data is available, the reviewer should include their assessment of the usability of

- the data within the given context. This may be used as part of a formal Data Quality Assessment (DQA).
- 3. Sometimes, due to dilutions, re-analysis or SIM/Scan runs are being performed, there will be multiple results for a single analyte from a single sample. The following criteria and professional judgment are used to determine which result should be reported:
 - The analysis with the lower CRQL
 - The analysis with the better QC results
 - The analysis with the higher results

EXECUTIVE NARRATIVE

SDG No:

JC36373

Laboratory:

Accutest, New Jersey

Analysis:

SW846-8015C

Number of Samples:

Location:

BMSMC, Humacao, PR

SUMMARY:

Seven (7) samples were analyzed for the low molecular weight alcohols (LMWAs) list following method SW846-8015C. The sample results were assessed according to USEPA data validation guidance documents in the following order of precedence: "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW-846 (Final Update III, December 1996)," specifically for Methods 8000/8015C are utilized. The QC criteria and data validation actions listed on the data review worksheets are from the primary

guidance document, unless otherwise noted.

Results are valid and can be used for decision making purposes.

Critical issues:

None

Major:

None

Minor:

None

Critical findings:

None

Major findings:

None

Minor findings:

1, MS/MSD % recovery and RPD within laboratory control limits except for the cases described in the Data Review Worksheet. RPD for ethanol, isopropyl alcohol, and methanol outside the laboratory control limits. No qualification made based on RPD results, spiked sample from another job.

No MS/MSD samples analyzed for the aqueous matrix. BS/BSD used to assess accuracy.

2. All surrogate recoveries within laboratory control limits except for the cases described in the Data Review Worksheet. Surrogate recovered high in one of the columns in sample JC36373-2. No action taken, no target analyte detected in sample batch.

COMMENTS:

Results are valid and can be used for decision making purposes.

Reviewers Name:

Rafael Infante

Chemist License 1888

Signature:

Date:

February 20, 2017

SAMPLE ORGANIC DATA SAMPLE SUMMARY

Sample ID: JC36373-1

Sample location: BMSMC, Humacao, PR

Sampling date: 1/25/2017

Matrix: Soil

METHOD: 8015C

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
Ethanol	110	ug/kg	1.0	-	U	Yes
Isobutyl Alcohol	110	ug/kg	1.0	-	U	Yes
Isopropyl Alcohol	110	ug/kg	1.0	-	U	Yes
n-Propyl Alcohol	110	ug/kg	1.0	-	U	Yes
n-Butyl Alcohol	110	ug/kg	1.0	-	U	Yes
sec-Butyl Alcohol	110	ug/kg	1.0	-	U	Yes
Methanol	220	ug/kg	1.0	-	U	Yes

Sample ID: JC36373-2

Sample location: BMSMC, Humacao, PR

Sampling date: 1/25/2017

Matrix: Soil

METHOD: 8015C

==						
Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
Ethanol	110	ug/kg	1.0	-	U	Yes
Isobutyl Alcohol	110	ug/kg	1.0	-	U	Yes
Isopropyl Alcohol	110	ug/kg	1.0	-	U	Yes
n-Propyl Alcohol	110	ug/kg	1.0	-	U	Yes
n-Butyl Alcohol	110	ug/kg	1.0	-	U	Yes
sec-Butyl Alcohol	110	ug/kg	1.0	-	U	Yes
Methanol	220	ug/kg	1.0	-	U	Yes

Sample ID: JC36373-3

Sample location: BMSMC, Humacao, PR

Sampling date: 1/25/2017

Matrix: Soil

METHOD: 8015C

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
Ethanol	110	ug/kg	1.0	-	U	Yes
Isobutyl Alcohol	110	ug/kg	1.0	-	U	Yes
Isopropyl Alcohol	110	ug/kg	1.0	-	U	Yes
n-Propyl Alcohol	110	ug/kg	1.0	-	U	Yes
n-Butyl Alcohol	110	ug/kg	1.0	-	U	Yes
sec-Butyl Alcohol	110	ug/kg	1.0	-	U	Yes
Methanol	210	ug/kg	1.0	_	U	Yes

Sample ID: JC36373-7

Sample location: BMSMC, Humacao, PR

Sampling date: 1/25/2017

Matrix: Soil

METHOD: 8015C

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
Ethanol	110	ug/kg	1.0	-	U	Yes
Isobutyl Alcohol	110	ug/kg	1.0	-	U	Yes
Isopropyl Alcohol	110	ug/kg	1.0	-	U	Yes
n-Propyl Alcohol	110	ug/kg	1.0	-	U	Yes
n-Butyl Alcohol	110	ug/kg	1.0	-	υ	Yes
sec-Butyl Alcohol	110	ug/kg	1.0	-	U	Yes
Methanol	210	ug/kg	1.0	-	U	Yes

Sample ID: JC36373-8

Sample location: BMSMC, Humacao, PR

Sampling date: 1/25/2017

Matrix: Soil

METHOD: 8015C

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
Ethanol	100	ug/kg	1.0	-	U	Yes
Isobutyl Alcohol	100	ug/kg	1.0	-	U	Yes
Isopropyl Alcohol	100	ug/kg	1.0	-	U	Yes
n-Propyl Alcohol	100	ug/kg	1.0	-	U	Yes
n-Butyl Alcohol	100	ug/kg	1.0	-	U	Yes
sec-Butyl Alcohol	100	ug/kg	1.0	(7.)	U	Yes
Methanol	210	ug/kg	1.0	•	U	Yes

Sample ID: JC36373-9

Sample location: BMSMC, Humacao, PR

Sampling date: 1/25/2017

Matrix: AQ - Equipment Blank

METHOD: 8015C

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
Ethanol	100	ug/l	1.0	-	U	Yes
					-	
Isobutyl Alcohol	100	ug/l	1.0	-	U	Yes
Isopropyl Alcohol	100	ug/l	1.0	-	U	Yes
n-Propyl Alcohol	100	ug/l	1.0	-	U	Yes
n-Butyl Alcohol	100	ug/l	1.0		U	Yes
sec-Butyl Alcohol	100	ug/l	1.0	-	U	Yes
Methanol	200	ug/l	1.0	-	U	Yes

Sample ID: JC36373-10

Sample location: BMSMC, Humacao, PR

Sampling date: 1/25/2017

Matrix: AQ - Field Blank Soil

METHOD: 8015C

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
Ethanol	100	ug/l	1.0	-	U	Yes
Isobutyl Alcohol	100	ug/l	1.0	-	U	Yes
Isopropyl Alcohol	100	ug/l	1.0	-	U	Yes
n-Propyl Alcohol	100	ug/l	1.0	-	U	Yes
n-Butyl Alcohol	100	ug/l	1.0	-	U	Yes
sec-Butyl Alcohol	100	ug/l	1.0	•	U	Yes
Methanol	200	ug/i	1.0	-	U	Yes

	Project Number:JC36373	
	Date:01/25/2017	
	Shipping Date:01/26/2017	
	EPA Region: 2	
REVIEW OF VOLATILE Of The following guidelines for evaluating volatile organics were document will assist the reviewer in using professional judgering the needs of the data users. The sample results guidance documents in the following order of preceder Physical/Chemical Methods SW-846 (Final Update III, Deceutilized. The QC criteria and data validation actions listed guidance document, unless otherwise noted. The hardcopied (laboratory name) _Accutest_and the quality control and performance data summarized. The	e created to delineate required validation acgment to make more informed decision an were assessed according to USEPA data ence: "Test Methods for Evaluating Somber 1996)," specifically for Methods 8000 on the data review worksheets are from the data package received has been	nd in bette a validation did Waste /8015C are the priman
Lab. Project/SDG No.:JC36373	Sample matrix:	
Trip blank No.: Field blank No.:JC36373-10 Equipment blank No.:JC36373-9 Field duplicate No.:		
X Data CompletenessX Holding TimesN/A_ GC/MS TuningN/A_ Internal Standard PerformanceX BlanksX Surrogate RecoveriesX Matrix Spike/Matrix Spike Duplicate	X Laboratory Control SpikesX Field DuplicatesX CalibrationsX Compound IdentificationsX Compound QuantitationX Quantitation Limits	
Overall Comments:_Low_molecular_weight_alcohols_t	py_SW-846_8015C	
Definition of Qualifiers: J- Estimated results U- Compound not detected R- Rejected data UJ- Estimated nondetect Reviewer:		
Date:February_20,_2017		

DATA COMPLETENESS

MISSING INFORMATION	DATE LAB. CONTACTED	DATE RECEIVED
-		ŧ
	200	
	1	
5-7a		
		3
	1	
		<u> </u>

All criteria were met_	X
Criteria were not met	
and/or see below	

HOLDING TIMES

The objective of this parameter is to ascertain the validity of the results based on the holding time of the sample from time of collection to the time of analysis.

Complete table for all samples and note the analysis and/or preservation not within criteria

SAMPLE ID	DATE SAMPLED	DATE ANALYZED	pН	ACTION
All samples analy	zed within the recomr	nended method holding	g. All sam	ples properly preserved.
			_	
	_			

Criteria

Aqueous samples – 14 days from sample collection for preserved samples (pH \leq 2, 4 $^{\circ}$ C), no air bubbles. Aqueous samples – 7 days from sample collection for unpreserved samples, 4 $^{\circ}$ C, no air bubbles.

Soil samples- 7 days from sample collection.

Cooler temperature (Criteria: 4 ± 2 °C): 3.6°C

Actions

If the VOCs vial(s) have air bubbles, estimate positive results (J) and reject nondetects (R).

If the % solids of soil samples is 10-50%, estimates positive results (J) and nondetects (UJ)

If the % solid of soil samples is < 10%, estimate positive results (J) and reject nondetects (R).

If holding times are exceeded but < 14 days beyond criteria, estimate positive results (J) and nondetects (UJ).

If holding times are exceeded but < 28 days beyond criteria, estimate positive results (J) and reject nondetects (R).

If holding times are grossly exceeded (> 28 days beyond criteria), reject all results (R).

If samples were not iced or if the ice were melted (> 10°C), estimate positive results (J) and nondetects (UJ).

All criteria were metN. Criteria were not met see below _	
umentation is within the stand	arc
hin the specified criteria.	
3.	
ata should be accepted, qualif	iec

GC/MS TUNING

The assessment of the tuning results is to determine if the sample instru tuning QC limits __N/A_ The BFB performance results were reviewed and found to be with __N/A_ BFB tuning was performed for every 12 hours of sample analysis If no, use professional judgment to determine whether the associated da or rejected. List the samples affected: _____

If mass calibration is in error, all associated data are rejected.

All criteria were met _	_X_	
Criteria were not met		
and/or see below		

CALIBRATION VERIFICATION

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing and maintaining acceptable quantitative data.

Date of initial calibration:	10/10/16
Dates of continuing calibration:	01/30/17
Dates of final calibration verification:	10/10/16;_01/30/16
Instrument ID number:	GCGH
Matrix/Level:Aqueous	s/low

DATE	LAB FILE ID#	CRITERIA OUT RFs, %RSD, %D, r	COMPOUND	SAMPLES AFFECTED

Note: Initial, continuing, and final calibration verifications meets method specific criteria in at least one of the two columns. Final calibration verification included in data packages.

Criteria

All RFs must be > 0.05 regardless of method requirements for SPCC.

All %RSD must be \leq 15 % regardless of method requirements for CCC.

All %Ds must be \leq 20% regardless of method requirements for CCC.

It should be noted that Region 2 SOP HW-24 does not specify criterion for the curve correlation coefficient (r). A limit for r of \geq 0.995 has therefore been utilized as professional judgment.

Actions

If any compound has an initial RF or a continuing RF of < 0.05, estimate positive results (J) and reject nondetects (R), regardless of method requirements.

If any compound has a %RSD > 15%, estimate positive results (J) and use professional judgment to qualify nondetects.

If any compound has a %RSD > 90%, estimate positive results (J) and reject nondetects (R).

If any compound has a % D > 20%, estimate positive results (J) and reject nondetects (R).

If any compound has a % D > 20%, estimate positive results (J) and nondetects (UJ).

If any compound has a % D > 90%, estimate positive results (J) and reject nondetects (R).

If any compound has r < 0.995, estimate positive results and nondetects.

A separate worksheet should be filled for each initial curve

All criteria were met __X__ Criteria were not met and/or see below_____

V A. BLANK ANALYSIS RESULTS (Sections 1 & 2)

The assessment of the blank analysis results is to determine the existence and magnitude of contamination problems. The criteria for evaluation of blanks apply only to blanks associated with the samples, including trip, equipment, and laboratory blanks. If problems with any blanks exist, all data associated with the case must be carefully evaluated to determine whether or not there is an inherent variability in the data for the case, or if the problem is an isolated occurrence not affecting other data.

List the contamination in the blanks below. High and low levels blanks must be treated separately.

Laboratory blanks

DATE ANALYZED	LAB ID	LEVEL/ MATRIX	COMPOUND	CONCENTRATION UNITS
			fic_criteria	
Field/Equipme	nt/Trip blank			
DATE ANALYZED	LAB ID	LEVEL/ MATRIX	COMPOUND	CONCENTRATION UNITS
		_this_data_pac		zed_with_this_data_package
	4-646			

All criteria were met _	_X_	
Criteria were not met		
and/or see below		

VB. BLANK ANALYSIS RESULTS (Section 3)

Blank Actions

Action Levels (ALs) should be based upon the highest concentration of contaminant determined in any blank. Do not qualify any blank with another blank. The ALs for samples which have been diluted should be corrected for the sample dilution factor and/or % moisture, where applicable. No positive sample results should be reported unless the concentration of the compound in the samples exceeds the ALs:

ALs = 10x the amount of common contaminants (methylene chloride, acetone, 2-butanone, and toluene) ALs = 5x for any other compounds

Specific actions are as follows:

If the concentration is < sample quantitation limit (SQL) and \le AL, report the compound as not detected (U) at the SQL.

If the concentration is \geq SQL but \leq AL, report the compound as not detected (U) at the reported concentration.

If the concentration is \geq SQL and > AL, report the concentration unqualified.

Notes:

High and low level blanks must be treated separately

Compounds qualified "U" for blank contamination are still considered "hits" when qualifying for calibration criteria.

CONTAMINATION SOURCE/LEVEL	COMPOUND	CONC/UNITS	AL/UNITS	SQL	AFFECTED SAMPLES
			4	-35	
				1	
		_			
1					

All criteria were met _	_X
Criteria were not met	
and/or see below	

SURROGATE SPIKE RECOVERIES

Laboratory performance of individual samples is established by evaluation of surrogate spike recoveries. All samples are spiked with surrogate compounds prior to sample analysis. The accuracy of the analysis is measured by the surrogate percent recovery. Since the effects of the sample matrix are frequently outside the control of the laboratory and may present relatively unique problems, the validation of data is frequently subjective and demands analytical experience and professional judgment.

List the percent recoveries (%Rs) which do not meet the criteria for surrogate recovery.

Matrix: solid/aqueous

SAMPLE ID		SURROGATE	COMPOUND		ACTION
	Hexar	nol DBFM	TOL-d8	BFB	
	S1 a	S1 b			
JC36373-9	119	108			
JC36373-10	117	97			
GGH5639-BS	102	102			
GGH5639-BSD	102	105			
GGH5639-MB1	99	111			
JC36373-1	101	107			
JC36373-2	99	143* c			
JC36373-3	101	96			
JC36373-7	96	85			
JC36373-8	125	109			
GGH5640-BS	100	94			
GGH5640-MB2	95	90			
JC36372-4MS	112	109			
JC36372-4MSD	93	94			
GGH5640-MB1	96	92			

- (a) Recovery from GC signal #2
- (b) Recovery from GC signal #1
- (c) High percent recovery and no positive found in sample.

Note: All surrogate recoveries within laboratory control limits except for the cases described in this document. Surrogate recovered high in one of the columns in sample JC36373-2. No action taken, no target analyte detected in sample batch.

QC Limits* (Aqueous)LL_to_UL	_56_to_145_	to	to	to
QC Limits* (Solid-Low)LL_to_UL		to	to	to
QC Limits* (Solid-Med)			to	to
1,2-DCA = 1,2-Dichloro DBFM = Dibromofluoro			Toluene-d8 mofluorobenzene	

- * QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.
- * If QC limits are not available, use limits of 80 120 % for aqueous and 70 130 % for solid samples.

Actions:

QUALITY	%R < 10%	%R = 10% - LL	%R > UL
Positive results	J	J	J
Nondetects results	R	UJ	Accept

Surrogate action should be applied:

If one or more surrogate in the VOC fraction is out of specification, but has a recovery of > 10%. If any one surrogate in a fraction shows < 10 % recovery.

All criteria were met	
Criteria were not met	
and/or see below	_X

VII. A MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD)

This data is generated to determine long term precision and accuracy in the analytical method for various matrices. This data alone cannot be used to evaluate the precision and accuracy of individual samples. If any % R in the MS or MSD falls outside the designated range, the reviewer should determine if there are matrix effects, i.e. LCS data are within the QC limits but MS/MSD data are outside QC limit.

1. MS/MSD Recoveries and Precision Criteria

The laboratory should use one MS and a duplicate analysis of an unspiked field sample if target analytes are expected in the sample. If target analytes are not expected, MS/MSD should be analyzed.

List the %Rs, RPD of the compounds which do not meet the criteria.

Sample ID:JC36372-4MS/-4MSD				Matrix/Level:Soil/low		
MS OR MSD	COMPOUND	% R	RPD	QC LIMITS	ACTION	
MS/MSD%_re _in_this_docum		within_lab	oratory_	control_limits_exc	cept_for_the_cases_d	escribed_
			7,200			

Note: RPD for ethanol, isopropyl alcohol, and methanol outside the laboratory control limits. RPD results apply to the unspiked sample, unspiked sample is from another job. No action taken.

No MS/MSD samples analyzed for the aqueous matrix. BS/BSD used to assess accuracy.

- * QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.
- * If QC limits are not available, use limits of 70 130 %.

Actions:

QUALITY	%R < LL	%R > UL
Positive results	J	J
Nondetects results	R	Accept

All criteria were met _	_X_	_
Criteria were not met		
and/or see below		

MS/MSD criteria apply only to the unspiked sample, its dilutions, and the associated MS/MSD samples:

If the % R for the affected compounds were < LL (or 70 %), qualify positive results (J) and nondetects (UJ).

If the % R for the affected compounds were > UL (or 130 %), only qualify positive results (J). If 25 % or more of all MS/MSD %R were < LL (or 70 %) or if two or more MS/MSD %Rs were < 10%, qualify all positive results (J) and reject nondetects (R).

VII. B MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD – Unspiked Compounds

It should be noted that Region 2 SOP HW-24 does not specify a MS/MSD criteria for the unspiked compounds in the sample. A %RSD of < 50% has therefore been utilized as professional judgment.

If all target analytes were spiked in the MS/MSD, this review element is not applicable.

List the %RSD of the compounds which do not meet the criteria.

Sample ID:			Matrix/Le	vel/Unit:		
COMPOUND	SAMPLE CONC.	MS CONC.	MSD CONC.	% RSD	ACTION	
		77				

	1:					
Salar Sa					888	

Actions:

A separate worksheet should be used for each MS/MSD pair.

^{*} If the % RSD > 50, qualify the positive result in the unspiked samples as estimated (J).

^{*} If the % RSD is not calculated (NC) due to nondetected value, use professional judgment to qualify the data.

All criteria were met _X_	
Criteria were not met	
and/or see below	

VIII. LABORATORY CONTROL SAMPLE (LCS) ANALYSIS

This data is generated to determine accuracy of the analytical method for various matrices.

1. LCS Recoveries Criteria

Where LCS spiked with the same analyte at the same concentrations as the MS/MSD? Yes or No. If no make note in data review memo.

List the %R of compounds which do not meet the criteria

LCS ID	COMPOUND	% R	QC LIMIT	
_within_labora	atory_control_limits			
	•			
	9502.50(60/00)	-87.50kg		_
	_within_labora	_within_laboratory_control_limits		

Note:

- * QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.
- * If QC limits are not available, use limits of 70 130 %.

Actions:

QUALITY	%R < LL	%R > UL
Positive results	J	J
Nondetects results	R	Accept

All analytes in the associated sample results are qualified for the following criteria.

If 25 % of the LCS recoveries were < LL (or 70 %), qualify all positive results (j) and reject nondetects (R).

If two or more LCS were below 10 %, qualify all positive results as (J) and reject nondetects (R).

2. Frequency Criteria:

Where LCS analyzed at the required frequency and for each matrix? <u>Yes</u> or No. If no, the data may be affected. Use professional judgment to determine the severity of the effect and qualify data accordingly. Discuss any actions below and list the samples affected.

		All criteria were metN/A Criteria were not met and/or see below
IX.	FIELD/LABORATORY DUPLICATE PRECISION	
	Sample IDs:	Matrix:

Field/laboratory duplicates samples may be taken and analyzed as an indication of overall precision. These analyses measure both field and lab precision; therefore, the results may have more variability than laboratory duplicates which only laboratory performance. It is also expected that soil duplicate results will have a greater variance than water matrices due to difficulties associated with collecting identical field duplicate samples.

The project QAPP should be reviewed for project-specific information.

Suggested criteria: RPD \pm 30% for aqueous samples, RPD \pm 50 % for solid samples. If both samples and duplicate are <5 SQL, the RPD criteria is doubled.

				_	
COMPOUND	SQL	SAMPLE CONC.	DUPLICATE CONC.	RPD	ACTION
No field/labo	ratory di	uplicates analyzed w	vith this data package. M	/IS/MSD	% recovery RPD and
BS/BSD % rec	overy R	PD used to assess p	precision. RPD within lat	poratory	control limits except for
the cases des	cribed in	this document. The	RPDs were within gene	erally ac	ceptable and guidance
		document perfo	rmance criteria control li	mits.	

Actions:

Qualify as estimated positive results (J) and nondetects (UJ) for the compound that exceeded the above criteria. For organics, only the sample and duplicate will be qualified.

If an RPD cannot be calculated because one or both of the sample results is not detected, the following actions apply:

If one sample result is not detected and the other is greater than 5x the SQL qualify (J/UJ).

If one sample value is not detected and the other is greater than 5x the SQL and the SQLs for the sample and duplicate are significantly different, use professional judgment to determine if qualification is appropriate.

If one sample value is not detected and the other is less than 5x, use professional judgment to determine if qualification is appropriate.

If both sample and duplicate results are not detected, no action is needed.

ΑI	criteria	were met	_N/A
Cri	teria w	ere not me	it
an	d/or see	below	

X. INTERNAL STANDARD PERFORMANCE

The assessment of the internal standard (IS) parameter is used to assist the data reviewer in determining the condition of the analytical instrumentation.

List the internal standard area of samples which do not meet the criteria.

- * Area of +100% or -50% of the IS area in the associated calibration standard.
- * Retention time (RT) within 30 seconds of the IS area in the associated calibration standard.

DATE	SAMPLE ID	IS OUT	IS AREA	RANGE	
					- 12
				- 19 - 19 C	
1000					

Actions:

1. IS actions should be applied to the compound quantitated with the out-of-control ISs

QUALITY	IS AREA < -25%	IS AREA = -25 % TO - 50%	IS AREA > + 100%
Positive results	J	J	J
Nondetected results	R	UJ	ACCEPT

2. If a IS retention time varies more than 30 seconds, the chromatographic profile for that sample must be examined to determine if any false positive or negative exists. For shifts of a large magnitude, the reviewer may consider partial or total rejection of the data for the sample fraction.

All criteria were met _	X_
Criteria were not met	
and/or see below	22

XII. SAMPLE QUANTITATION

The sample quantitation evaluation is to verify laboratory quantitation results. In the space below, please show a minimum of one sample calculation:

JC36373-1

Hexanol

$$RF = 73.89$$

All criteria were met _	_X
Criteria were not met	
and/or see below	10

XII. QUANTITATION LIMITS

A. Dilution performed

SAMPLE ID	DILUTION FACTOR	REASON FOR DILUTION
10000		
	100	
	1	1

Percent Solid				
List samples v	which have ≤	50 % solids		

Actions:

If the % solids of a soil sample is 10-50%, estimate positive results (J) and nondetects (UJ)

If the % solids of a soil sample is < 10%, estimate positive results (J) and reject nondetects (R) $\,$

EXECUTIVE NARRATIVE

SDG No:

JC36373

Laboratory:

Accutest, New Jersey

Analysis:

SW846-8081B

Number of Samples:

Location:

BMSMC, Humacao, PR

SUMMARY:

Seven (7) samples were analyzed for the TCL pesticides list following method SW846-8081B. The sample results were assessed according to USEPA data validation guidance documents in the following order of precedence *Hazardous Waste Support Section SOP No. HW-36A, Revision O, June, 2015. SOM02.2. Pesticide Data Validation.* The QC criteria and data validation actions listed on the data review worksheets are from the primary

guidance document, unless otherwise noted.

Results are valid and can be used for decision making purposes.

Critical issues:

None

Major:

None

Minor:

None

Critical findings:

None

Major findings:

None

Minor findings:

- 1. Initial and initial calibration verification within the guidance document performance criteria. Continuing calibration % differences meet the performance criteria in at least one of the two columns. Final calibration verification not included in data package. No action taken.
- 2. MS/MSD % recoveries and RPD within laboratory control limits except for the cases described in the Data Review Worksheet. No qualifications made, spiked sample from another job.
- **3.** Hepthachlor in sample JC36373-3 more than 40 % RPD concentration between the two columns. Heptachlor detected above the MDL but below the RL, the laboratory qualified the result with a J qualifier. No additional qualification performed.

gamma-BHC in sample JC36373-7 more than 40 % RPD concentration between the two columns. gamma-BHC detected above the MDL but below the RL, the laboratory qualified the result with a J qualifier. No additional qualification performed.

COMMENTS:

Results are valid and can be used for decision making purposes.

Reviewers Name:

Rafael Infante

Chemist License 1888

Signature:

Date:

February 20, 2017

SAMPLE ORGANIC DATA SAMPLE SUMMARY

Sample ID: JC36373-1
Sample location: BMSMC, Humacao, PR
Sampling date: 25-Jan-17
Matrix: Soil

Reportable	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lab Flag Validation	n	Ω	⊃	⊃	D	n	⊃	⊃	n	n	⊃	⊃	⊃	J	D	⊃	⊃	n	n	⊃	D
Lab Flag	•	•	•	ι	•	1	•	•	a	,	•	1	•	•	1	•	•	•	•	1	1
Jnits Dilution Factor	П	П	1	П	1	1	П	П	П	П	Н	П	1	П	П	П	₽	П	П	1	н
Units D	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
 Result	69.0	0.69	69.0	69.0	69.0	69'0	69.0	69.0	69.0	69.0	69.0	69.0	69.0	69.0	69.0	69.0	69.0	69.0	1.4	69'0	17
Analyte Name	Aldrin	alpha-BHC	beta-BHC	delta-BHC	gamma-BHC (Lindane)	alpha-Chlordane	gamma-Chlordane	Dieldrin	4,4'-DDD	4,4'-DDE	4,4'-DDT	Endrin	Endosulfan sulfate	Endrin aldehyde	Endosulfan-l	Endosulfan-II	Heptachlor	Heptachlor epoxide	Methoxychlor	Endrin ketone	Toxaphene

Sample ID: JC36373-2 Sample location: BMSMC, Humacao, PR

Sampling date: 25-Jan-17 Matrix: Soil

Analyte Name	Pocult	I loite f	Inite Dilution Eactor	lah Elag	woite bile V	Octoblo
	uesau		Mution Factor	Can ridg		reportable
	0.72	ug/kg	П	•	ם	Yes
	0.72	ug/kg	1	ı	O	Yes
	0.72	ug/kg	1	•	o	Yes
	0.72	ug/kg	1	1	⊃	Yes
	0.72	ug/kg	1	,	D	Yes
	0.72	ug/kg	П	,	⊃	Yes
	0.72	ug/kg	Н	1	D	Yes
	0.72	ug/kg	Н	1	D	Yes
	0.72	ug/kg	Н	1	⊃	Yes
	0.72	ug/kg	₽	ı	D	Yes
	0.72	ug/kg	Н	1	⊃	Yes
	0.72	ug/kg	н	1	⊃	Yes
	0.72	ug/kg	1	•	-	Yes
	0.72	ug/kg	Н		⊃	Yes
	0.72	ug/kg	⊣	100	⊃	Yes
	0.72	ug/kg	⊣	1	⊃	Yes
	0.72	ug/kg	П	•	n	Yes
	0.72	ug/kg	н	ı	J	Yes
	1.4	ug/kg	H	1)	Yes
	0.72	ug/kg	Н	1	>	Yes
	18	ug/kg	1	r.	D	Yes

Sample ID: JC36373-3
Sample location: BMSMC, Humacao, PR
Sampling date: 25-Jan-17
Matrix: Soil

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Analyte Name	Result	Units Dil	Jnits Dilution Factor	Lab Flag	Validation	Reportable
Aldrin	0.70	ug/kg	1	1	n	Yes
alpha-BHC	0.70	ug/kg	П	,	n	Yes
beta-BHC	0.70	ug/kg	П	,	n	Yes
delta-BHC	0.70	ug/kg	П	,	O	Yes
gamma-BHC (Lindane)	0.70	ug/kg	П	1	n	Yes
alpha-Chlordane	0.70	ug/kg	П	r	n	Yes
gamma-Chlordane	0.70	ug/kg	П	9	n	Yes
Dieldrin	0.70	ug/kg	П	r	n	Yes
4,4'-DDD	0.70	ug/kg	П	•	n	Yes
4,4'-DDE	0.70	ug/kg	П	٠	n	Yes
4,4'-DDT	0.70	ug/kg	П	1)	Yes
Endrin	0.70	ug/kg	Н	ï	-	Yes
Endosulfan sulfate	0.70	ug/kg	П	,)	Yes
Endrin aldehyde	0.70	ug/kg	1	1	n	Yes
Endosulfan-l	0.70	ug/kg	1		n	Yes
Endosulfan-II	0.70	ug/kg	1	,	n	Yes
Heptachlor	0.69	ug/kg	П	_	_	Yes
Heptachlor epoxide	0.70	ug/kg	П	,	n	Yes
Methoxychlor	1.4	ug/kg	н	e	n	Yes
Endrin ketone	0.70	ug/kg	Н	a.	n	Yes
Toxaphene	17	ug/kg	Н	£	O	Yes

Sample ID: JC36373-7
Sample location: BMSMC, Humacao, PR
Sampling date: 25-Jan-17
Matrix: Soil

Sample ID: JC36373-8
Sample location: BMSMC, Humacao, PR
Sampling date: 25-Jan-17
Matrix: Soil

Analyte Name	Result	Units	Jnits Dilution Factor	Lab Flag	Lab Flag Validation	Reportable	
Aldrin	0.67	ug/kg	1	٠)	Yes	
alpha-BHC	0.67	ug/kg	1	•	ב	Yes	
beta-BHC	0.67	ug/kg	₽	•	⊃	Yes	
delta-BHC	0.67	ug/kg	↔	,)	Yes	
gamma-BHC (Lindane)	0.67	ug/kg	⊣	1	-	Yes	
alpha-Chlordane	0.67	ug/kg	1	î	D	Yes	
gamma-Chlordane	0.67	ug/kg	1	٠	⊃	Yes	
Dieldrin	0.67	ug/kg	1		⊃	Yes	
4,4'-DDD	2.0	ug/kg	~	,	•	Yes	
4,4'-DDE	0.67	ug/kg	1	ï	⊃	Yes	
4,4'-DDT	0.67	ug/kg	1	,	⊃	Yes	
Endrin	0.67	ug/kg	1	ï	⊃	Yes	
Endosulfan sulfate	0.67	ug/kg	₩	•	⊃	Yes	
Endrin aldehyde	0.67	ug/kg	П	1	ח	Yes	
Endosulfan-l	0.67	ug/kg	П	,	n	Yes	
Endosulfan-II	0.67	ug/kg	ᆏ	Ċ	-	Yes	
Heptachlor	0.67	ug/kg	Н	•	n	Yes	
Heptachlor epoxide	0.67	ug/kg	1	٠	⊃	Yes	
Methoxychlor	1.3	ug/kg	П		⊃	Yes	
Endrin ketone	0.67	ug/kg	1	E	⊃	Yes	
Toxaphene	17	ug/kg	П		n	Yes	

Sample ID: JC36373-9 Sample location: BMSMC, Humacao, PR

Sampling date: 25-Jan-17 Matrix: AQ - Equipment Blank

Analyte Name	Result	Units Dilution Factor	ion Factor	Lab Flag	Validation	Reportable
Aldrin	0.011	l/gn	ᆏ		D	Yes
alpha-BHC	0.011	ug/l	П	ı	⊃	Yes
beta-BHC	0.011	ug/l	₩.	•	n	Yes
delta-BHC	0.011	l/gn	1		⊃	Yes
gamma-BHC (Lindane)	0.011	l/gn	1	1	n	Yes
alpha-Chlordane	0.011	l/gn	1	ı)	Yes
gamma-Chlordane	0.011	l/gn	1	,	⊃	Yes
Dieldrin	0.011	l/gn	1	•	Þ	Yes
4,4'-DDD	0.011	ng/l	1		⊃	Yes
4,4'-DDE	0.011	l/gn	7	1	D	Yes
4,4'-DDT	0.011	ug/i	-	1	D	Yes
Endrin	0.011	l/gn	1		⊃	Yes
Endosulfan sulfate	0.011	l/gn	Н	1	⊃	Yes
Endrin aldehyde	0.011	l/gn	1	1	D	Yes
Endrin ketone	0.011	l/gn	1	•	>	Yes
Endosulfan-i	0.011	l/gn	1	1	⊃	Yes
Endosulfan-II	0.011	l/gn	1		D	Yes
Heptachlor	0.011	ng/l	H	1	⊃	Yes
Heptachlor epoxide	0.011	l/gn	1	1	D	Yes
Methoxychlor	0.022	l/gn	Ħ	5	⊃	Yes
Toxaphene	0.27	ug/l	1	ř.	ס	Yes

Sample ID: JC36373-10 Sample location: BMSMC, Humacao, PR

Sampling date: 25-Jan-17 Matrix: AQ - Field Blank Soil

WE TOO	21000					
Analyte Name	Result	Units Dil	Jnits Dilution Factor	Lab Flag	Validation	Reportable
Aldrin	0.011	ug/l	1		D	Yes
alpha-BHC	0.011	ng/l	1	1	⊃	Yes
beta-BHC	0.011	l/8n	Т		ב	Yes
delta-BHC	0.011	ug/i	1		⊃	Yes
gamma-BHC (Lindane)	0.011	l∕8n	1	•	⊃	Yes
alpha-Chlordane	0.011	ug/l	1	1	D	Yes
gamma-Chlordane	0.011	l∕8n	1	•	⊃	Yes
Dieldrin	0.011	l∕8n	1	ï	⊃	Yes
4,4'-DDD	0.011	l∕gn	1	•	⊃	Yes
4,4'-DDE	0.011	ng/l	н	1	⊃	Yes
4,4'-DDT	0.011	ng/l	Н	•	⊃	Yes
Endrin	0.011	ug/l	Н	•	⊃	Yes
Endosulfan sulfate	0.011	ug/l	П	ı	⊃	Yes
Endrin aldehyde	0.011	ng/l	Н	a.	⊃	Yes
Endrin ketone	0.011	ng/l	Н	c	n	Yes
Endosulfan-i	0.011	ng/l	Н	(r	⊃	Yes
Endosulfan-II	0.011	l∕Bn	Н	ř.	⊃	Yes
Heptachlor	0.011	ng∕l	Н		⊃	Yes
Heptachlor epoxide	0.011	l/gn	н	je:	⊃	Yes
Methoxychlor	0.022	ng/l	Н	ī	⊃	Yes
Toxaphene	0.27	l∕gn	₽	¢	⊃	Yes

	Project/CasNumber:JC36373 Sampling Date:01/25/2017 Shipping Date:01/26/17
	EPA Region No.:2
REVIEW OF PESTICIDE ORG	BANIC PACKAGE
The following guidelines for evaluating volatile organization actions. This document will assist the revenue make more informed decision and in better service sample results were assessed according to USEPA the following order of precedence Hazardous Was Revision 0, June, 2015. SOM02.2. Pesticide Data validation actions listed on the data review work document, unless otherwise noted.	viewer in using professional judgment to ring the needs of the data users. The A data validation guidance documents in aste Support Section SOP No. HW-36A, Validation. The QC criteria and data
The hardcopied (laboratory name) _Accutest	data package received has been arized. The data review for VOCs included:
Lab. Project/SDG No.:JC36373 No. of Samples:7	
X Data CompletenessX Holding TimesN/A GC/MS TuningX Internal Standard PerformanceX BlanksX Surrogate RecoveriesX Matrix Spike/Matrix Spike Duplicate Overall Comments:TCL_pesticides_list_by_SW846-80	X Laboratory Control SpikesX Field DuplicatesX CalibrationsX Compound IdentificationsX Compound QuantitationX Quantitation Limits
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DATA COMPLETENESS

MISSING INFORMATION	DATE LAB. CONTACTED	DATE RECEIVED
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All criteria were met _	.X
Criteria were not met	
and/or see below	

HOLDING TIMES

The objective of this parameter is to ascertain the validity of the results based on the holding time of the sample from time of collection to the time of analysis.

Complete table for all samples and note the analysis and/or preservation not within criteria

SAMPLE ID	DATE SAMPLED	DATE EXTRACTED/ANALYZED	ACTION
Samples properly	preserved. All sam	ples extracted and analyzed wi	thin the required criteria.
			NA

Note:

Criteria

Aqueous samples - seven (7) days from sample collection for extraction; 40 days from sample collection for analysis.

Non-aqueous samples – fourteen (14) days from sample collection for extraction; 40 days from sample collection for analysis.

Cooler temperature (Criteria: 4 ± 2 °C): 3.6°C - OK

Actions

Qualify aqueous sample results using preservation and technical holding time information as follows:

- a. If there is no evidence that the samples were properly preserved ($T = 4^{\circ}C \pm 2^{\circ}C$), and the samples were extracted or analyzed within the technical holding times, qualify detects as estimated (J) and non-detects as estimated (UJ).
- b. If there is no evidence that the samples were properly preserved ($T = 4^{\circ}C \pm 2^{\circ}C$), and the samples were extracted or analyzed outside the technical holding times, qualify detects as estimated (J) and non-detects as estimated (UJ).
- c. If the samples were properly preserved, and were extracted and analyzed within the technical holding times, no qualification of the data is necessary.
- d. If the samples were properly preserved, and were extracted or analyzed outside the technical holding times, qualify detects as estimated (J) and non-detects as estimated (UJ). Note in the Data Review Narrative that holding times were exceeded and the effect of exceeding the holding time on the resulting data.

- e. Use professional judgment to qualify samples whose temperature upon receipt at the laboratory is either below 2 degrees centigrade or above 6 degrees centigrade.
- f. If technical holding times are grossly exceeded, use professional judgment to qualify the data.

Qualify non-aqueous sample results using preservation and technical holding time information as follows:

- a. If there is no evidence that the samples were properly preserved ($T = 4^{\circ}C \pm 2^{\circ}C$), and the samples were extracted or analyzed within the technical holding time, qualify detects as estimated (J) and non-detects as estimated (UJ).
- b. If there is no evidence that the samples were properly preserved ($T = 4^{\circ}C \pm 2^{\circ}C$), and the samples were extracted or analyzed outside the technical holding time, qualify detects as estimated (J) and non-detects as estimated (UJ).
- c. If the samples were properly preserved, and were extracted and analyzed within the technical holding time, no qualification of the data is necessary.
- d. If the samples were properly preserved, and were extracted or analyzed outside the technical holding time, qualify detects as estimated (J) and non-detects as estimated (UJ). Note in the Data Review Narrative that holding times were exceeded and the effect of exceeding the holding time on the resulting data.
- e. Use professional judgment to qualify samples whose temperature upon receipt at the laboratory is either below 2 degrees centigrade or above 6 degrees centigrade.
- f. If technical holding times are grossly exceeded, use professional judgment to qualify the data.

	All criteria were met	X_	
Criteria	were not met see helow		

GAS CHROMATOGRAPH WITH ELECTRON CAPTURE DETECTOR (GC/ECD) INSTRUMENT PERFORMANCE CHECK (SECTIONS 1 TO 5)

1. Resolution Check Mixture

Criteria

Is the resolution between two adjacent peaks in the Resolution Check Mixture C greater than or equal to 80.0% for all analytes for the primary column and greater than or equal to 50.0% for the confirmation column?

Yes? or No?

Is the resolution between two adjacent peaks in the Resolution Check Mixture (A and B) greater than or equal to 60.0%?

Yes? or No?

Note: If resolution criteria are not met, the quantitative results may not be accurate due to inadequate resolution. Qualitative identifications may also be questionable if coelution exists.

Action

- a. Qualify detects for target compounds that were not adequately resolved as tentatively identified (NJ).
- b. Qualify non-detected compounds as unusable (R).

2. Performance Evaluation Mixture (PEM) Resolution Criteria

Criteria

Is PEM analysis performed at the required frequency (at the end of each pesticide initial calibration sequence and every 12 hours)?

Yes? or No?

Action

a. If PEM is not performed at the required frequency, qualify all associated sample and blank results as unusable (R).

Criteria

Is PEM % Resolution < 90%?

Yes? or No?

Action

- a. a. Qualify detects for target compounds that were not adequately resolved as tentatively identified (NJ).
- b. Qualify non-detected compounds as unusable (R).

All o	riteria wei	re met_	x_
Criteria wen	e not met	see belo	w

3. PEM 4,4'-DDT Breakdown

Criteria

Is the PEM 4,4'-DDT % Breakdown >20.0% and 4,4'-DDT is detected?

Yes? or No?

Action

a. Qualify detects for 4,4'-DDT; detects for 4,4'-DDD; and detects for 4,4'-DDE as estimated (J)

Criteria

Is the PEM 4,4'-DDT % Breakdown >20.0% and 4,4'-DDT is not detected

Yes? or No?

Action

- a. Qualify non-detects for 4,4'- DDT as unusable (R)
- b. Qualify detects for 4,4'-DDD as tentatively identified (NJ)
- c. Qualify detects for 4,4'-DDE as tentatively identified (NJ)

4. PEM Endrin Breakdown

Criteria

Is the PEM Endrin % Breakdown >20.0% and Endrin is detected?

Yes? or No?

Action

a. Qualify detects for Endrin; detects for Endrin aldehyde; and detects for Endrin ketone as estimated(J)

Criteria

Is the PEM Endrin % Breakdown >20.0% and Endrin is not detected

Yes? or No?

Action

- a. Qualify non-detects for Endrin as unusable (R)
- b. Qualify detects for Endrin aldehyde as tentatively identified (NJ)
- c. Qualify detects for Endrin ketone as tentatively identified (NJ)

All criteria were met _	_X
Criteria were not met see beld	w

5. Mid-point Individual Standard Mixture Resolution -

Criteria

Is the resolution between two adjacent peaks in the Resolution Check Mixture C greater than or equal to 80.0% for all analytes for the primary column and greater than or equal to 50.0% for the confirmation column?

Yes? or No?

Is the resolution between two adjacent peaks in the Resolution Check Mixture (A and B) greater than or equal to 90.0%?

Yes? or No?

Note: If resolution criteria are not met, the quantitative results may not be accurate due to inadequate resolution. Qualitative identifications may also be questionable if coelution exists.

Action

- a. Qualify detects for target compounds that were not adequately resolved as tentatively identified (NJ).
- b. Qualify non-detected compounds as unusable (R).

Criteria

Is mid-point individual standard mixture analysis performed at the required frequency (every 12 hours)?

Yes? or No?

Action

a. If the mid-point individual standard mixture analysis is not performed at the required frequency, qualify all associated sample and blank results as unusable (R).

All criteria were met	_X
Criteria were not met	
and/or see below	-

CALIBRATION VERIFICATION

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing and maintaining acceptable quantitative data.

Date of initial calibration:	01/23/17	11/15/16
Dates of initial calibration verifica	tion:01/23/17	11/15/16
Dates of continuing calibration:	_02/01/17:_02/02/17;_02/07/17	02/02/17
Dates of final calibration		02/02/17
Instrument ID numbers:	GC4G	GC8H
Matrix/Level:	Aqueous/low	Aqueous/low

DATE	LAB ID#	FILE	CRITERIA OUT RFs, %RSD, %D, r	COMPOUND	SAMPLES AFFECTED

Note: Initial and initial calibration verification within the guidance document performance criteria. Continuing calibration % differences meet the performance criteria in at least one of the two columns.

Final calibration verification not included in data package. No action taken.

Endrin ketone %D in continuing calibration check (cc2009-25; 02/02/17) was outside the method performance criteria. No sample analyzed during this batch.

Criteria

Are a five point calibration curve delivered with concentration levels as shown in Table 3 of SOP HW-36A, Revision 0, June, 2015? Yes? or No?

Actions

If the standard concentrations listed in Table 3 are not used, use professional judgment to evaluate the effect on the data

Criteria

Are RT Windows calculated correctly?

Yes? or No?

Action

Recalculate the windows and use the corrected values for all evaluations.

Criteria

Are the Percent Relative Standard Deviation (%RSD) of the CFs for each of the single component target compounds less than or equal to 20.0%, except for alpha-BHC and delta-BHC?

Yes? or No?

All criteria were metX_	
Criteria were not met	
and/or see below	

Are the %RSD of the CFs for alpha-BHC and delta-BHC less than or equal to 25.0%. Yes? or No?

Is the %RSD of the CFs for each of the Toxaphene peaks must be < 30% when 5-point ICAL is performed?

Yes? or No?

Is the %RSD of the CFs for the two surrogates (tetrachloro-m-xylene and decachlorobiphenyl) less than or equal to 30.0%. Yes? or No?

Action

- a. If the %RSD criteria are not met, qualify detects as estimated (J) and use professional judgment to qualify non-detected target compounds.
- b. If the %RSD criteria are within allowable limits, no qualification of the data is necessary

Continuing Calibration Checks

Criteria

Is the continuing calibration standard analyzed at the acceptable time intervals? Yes? or No?

Action

- a. If more than 14 hours has elapsed from the injection of the instrument blank that begins an analytical sequence (opening CCV) and the injection of either a PEM or mid-point concentration of the Individual Standard Mixtures (A and B) or (C), qualify all data as unusable (R).
- b. If more than 12 hours has elapsed from the injection of the instrument blank that begins an analytical sequence (opening CCV) and the injection of the last sample or blank that is part of the same analytical sequence, qualify all data as unusable (R).
- c. If more than 72 hours has elapsed from the injection of the sample with a Toxaphene detection and the Toxaphene Calibration Verification Standard (CS3), qualify all data as unusable (R).

Criteria

Is the Percent Difference (%D) within ±25.0% for the PEM sample?

Yes? or No?

Action

a. Qualify associated detects as estimated (J) and non-detects as estimated (UJ).

Criteria

For the Calibration Verification Standard (CS3); is the Percent Difference (%D) within ± 25.0%? Yes? or No?

Action

Qualify associated detects as estimated (J) and non-detects as estimated (UJ).

Criteria

Is the PEM 4,4'-DDT % Breakdown >20.0% and 4,4'-DDT is detected?

Yes? or No?

Action

- a. Qualify detects for 4,4'-DDT; detects for 4,4'-DDD; and detects for 4,4'-DDE as estimated (J)
- b. Non-detected associated compounds are not qualified

Criteria

Is the PEM 4,4'-DDT % Breakdown >20.0% and 4,4'-DDT is not detected

Yes? or No?

Action

- a. Qualify non-detects for 4,4'- DDT as unusable (R)
- b. Qualify detects for 4,4'-DDD as tentatively identified (NJ)
- c. Qualify detects for 4,4'-DDE as tentatively identified (NJ)

Criteria

Is the PEM Endrin % Breakdown >20.0% and Endrin is detected?

Yes? or No?

Action

- a. Qualify detects for Endrin; detects for Endrin aldehyde; and detects for Endrin ketone as estimated (J)
- b. Non-detected associated compounds are not qualified

Criteria

Is the PEM Endrin % Breakdown >20.0% and Endrin is not detected

Yes? or No?

Action

- a. Qualify non-detects for Endrin as unusable (R)
- b. Qualify detects for Endrin aldehyde as tentatively identified (NJ)
- c. Qualify detects for Endrin ketone as tentatively identified (NJ)

All criteria were metX_	
Criteria were not met	
and/or see below	

BLANK ANALYSIS RESULTS (Sections 1 & 2)

The assessment of the blank analysis results is to determine the existence and magnitude of contamination problems. The criteria for evaluation of blanks apply only to blanks associated with the samples, including trip, equipment, and laboratory blanks. If problems with any blanks exist, all data associated with the case must be carefully evaluated to determine whether or not there is an inherent variability in the data for the case, or if the problem is an isolated occurrence not affecting other data.

List the contami	nation in the bla	anks below. Hig	h and low levels blanks	must be treated separately.
CRQL concentr	ationN	/A		
Laboratory blan	ks			
DATE ANALYZED	LAB ID	LEVEL/ MATRIX	COMPOUND	CONCENTRATION UNITS
_ug/L				nit_of_0.01,_0.02,_and_0.25_
Field/Equipme		LEVEL/		CONCENTRATION
ANALYZED	outo dotootod ii	MATRIX	inmont blanks analyza	UNITS
arget_ana	ayte_detected_i	n_me_neia/equ	ipmem_bianks_analyze	d_with_this_data_package

All criteria were metX_	
Criteria were not met	1
and/or see below	

BLANK ANALYSIS RESULTS (Section 3)

Blank Actions

Action Levels (ALs) should be based upon the highest concentration of contaminant determined in any blank. Do not qualify any blank with another blank. The ALs for samples which have been diluted should be corrected for the sample dilution factor and/or % moisture, where applicable. No positive sample results should be reported unless the concentration of the compound in the samples exceeds the ALs:

The concentration of non-target compounds in all blanks must be less than or equal to 10 μ g/L. The concentration of each target compound found in the method or field blanks must be less than its CRQL listed in the method.

Data concerning the field blanks are not evaluated as part of the CCS process. If field blanks are present, the data reviewer should evaluate this data in a similar fashion as the method blanks.

Specific actions are as follows:

Blank Actions for Pesticide Analyses

Blank Type	Blank Result	Sample Result	Action for Samples
	Detects	Not detected	No qualification required
	< CRQL	< CRQL	Report CRQL value with a U
		≥ CRQL	No qualification required
Method, Sulfur Cleanup, Instrument, Field, TCLP/SPLP		< CRQL	Report CRQL value with a U
	> CRQL	≥ CRQL and ≤ blank concentration	Report blank value for sample concentration with a U
		≥ CRQL and > blank concentration	No qualification required
	= CRQL	≤CRQL	Report CRQL value with a U
		> CRQL	No qualification required
	Gross contamination	Detects	Report blank value for sample concentration with a U

All criteria were metX	
Criteria were not met	
and/or see below	

CONTAMINATION SOURCE/LEVEL	COMPOUND	CONC/UNITS	AL/UNITS	SQL	AFFECTED SAMPLES

All criteria were met __X__ Criteria were not met and/or see below ____

SURROGATE SPIKE RECOVERIES

Laboratory performance of individual samples is established by evaluation of surrogate spike recoveries. All samples are spiked with surrogate compounds prior to sample analysis. The accuracy of the analysis is measured by the surrogate percent recovery. Since the effects of the sample matrix are frequently outside the control of the laboratory and may present relatively unique problems, the validation of data is frequently subjective and demands analytical experience and professional judgment.

List the percent recoveries (%Rs) which do not meet the criteria for surrogate recovery.

Matrix:_Aqueous/Solid_						
Lab	Lab					
Sample ID	File ID	S1 a	S1 b	S2 a	S2 b	
JC36373-9	8G2633.D	81	83	43	38	
JC36373-10	8G2634.D	85	86	55	47	
OP233-BS1	8G2577.D	87	76	102	80	
OP233-MB1	8G2576.D	88	81	71	61	
OP233-MB1	4G77729.D	96	92	71	70	
OP233-MS	8G2631.D	83	85	106	90	
OP233-MSD	8G2632.D	85	85	102	87	
JC36373-1	4G77553.D	91	85	94	78	
JC36373-2	4G77554.D	79	79	94	66	
JC36373-3	4G77555.D	88	83	114	81	
JC36373-7	4G77556.D	83	79	103	79	
JC36373-8	4G77557.D	85	79	111	76	
OP215-BS1	4G77546.D	91	85	122	97	
OP215-MB1	4G77545.D	88	81	125	92	
OP215-MS	4G77551.D	83	76	112	78	
OP215-MSD	4G77552.D	88	80	103	69	
Surrogate Compounds		Recove	ery Limit	s (Aque	ous)	Recovery limits (Solids)
S1 = Tetrachloro-m-xyle		13-153				24-136 %
S2 = Decachlorobiphen	yl	10-138	%			10-153 %

⁽a) Recovery from GC signal #1

Note: Surrogate recoveries were within laboratory control limits.

⁽b) Recovery from GC signal #2

Actions:

- a. For any surrogate recovery greater than 150%, qualify detected target compounds as biased high (J+).
- b. Do not qualify non-detected target compounds for surrogate recovery > 150 %.
- c. If both surrogate recoveries are greater than or equal to 30% and less than or equal to 150%, no qualification of the data is necessary.
- d. For any surrogate recovery greater than or equal to 10% and less than 30%, qualify detected target compounds as biased low (J-).
- e. For any surrogate recovery greater than or equal to 10% and less than 30%, qualify non-detected target compounds as approximated (UJ).
- f. If low surrogate recoveries are from sample dilution, professional judgment should be used to determine if the resulting data should be qualified. If sample dilution is not a factor:
 - i. Qualify detected target compounds as biased low (J-).
 - ii. Qualify non-detected target compounds as unusable (R).
- g. If surrogate RTs in PEMs, Individual Standard Mixtures, samples, and blanks are outside of the RT Windows, the reviewer must use professional judgment to qualify data.
- h. If surrogate RTs are within RT windows, no qualification of the data is necessary.
- i. If the two surrogates were not added to all samples, MS/MSDs, standards, LCSs, and blanks, use professional judgment in qualifying data as missing surrogate analyte may not directly apply to target analytes.

Summary Surrogate Actions for Pesticide Analyses

	Action*			
Criteria	Detected Target	Non-detected Target		
	Compounds	Compounds		
%R > 150%	J+	No qualification		
30% < %R < 150%	No qualification			
10% < %R < 30%	J-	UJ		
%R < 10% (sample dilution not a factor)	J-	R		
%R < 10% (sample dilution is a factor)	Use professional judgment			
RT out of RT window	Use professional judgment			
RT within RT window	No qua	alification		

* Use professional judgment in qualifying data, as surrogate recovery problems may not directly apply to target analytes.

All criteria were met	
Criteria were not met	
and/or see below	_X

Method: SW846 8081B

MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD)

This data is generated to determine long term precision and accuracy in the analytical method for various matrices. This data alone cannot be used to evaluate the precision and accuracy of individual samples. If any % R in the MS or MSD falls outside the designated range, the reviewer should determine if there are matrix effects, i.e. LCS data are within the QC limits but MS/MSD data are outside QC limit.

MS/MSD Recoveries and Precision Criteria

Data for MS and MSDs will not be present unless requested by the Region.

Notify the Contract Laboratory Program Project Officer (CLP PO) if a field blank was used for the MS and MSD, unless designated as such by the Region.

NOTE: For a Matrix Spike that does not meet criteria, apply the action to only the field sample used to prepare the Matrix Spike sample. If it is clearly stated in the data validation materials that the samples were taken through incremental sampling or some other method guaranteeing the homogeneity of the sample group, then the entire sample group may be qualified.

List the %Rs, RPD of the compounds which do not meet the criteria.

Sample ID:	_JC36372-4MS/MSD	Matrix/Level:Soil
Sample ID:	_JC36371-2MS/MSD	Matrix/Level:_Aqueous

The QC reported here applies to the following samples: JC36373-1, JC36373-2, JC36373-3, JC36373-4

Compound	JC36372-4 ug/kg Q		MS ug/kg	MS %	Spike ug/kg	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
Aldrin	ND	19	46.9	247* a	19	17.0	90	94* a	23-143/44
heta-BHC	ND	19	9.0	47	19	16.9	89	61* a	7-143/48

⁽a) Outside the QC limits.

Note: MS/MSD % recoveries and RPD within laboratory control limits except for the cases described in this document. Results apply to unspiked sample. Unspiked sample was from another job. No qualifications made.

Action

No qualification of the data is necessary on MS and MSD data alone. However, using professional judgment, the validator may use the MS and MSD results in conjunction with other QC criteria and determine the need for some qualification of the data.

A separate worksheet should be used for each MS/MSD pair.

^{*} Outside QC limits

All criteria were met _X_	
Criteria were not met	
and/or see below	

LABORATORY CONTROL SAMPLE (LCS) ANALYSIS

This data is generated to determine accuracy of the analytical method for various matrices.

1. LCS Recoveries Criteria

LCS Spike Compound	Recovery Limits (%)
gamma-BHC	50 – 120
Heptachlor epoxide	50 – 150
Dieldrin	30 – 130
4,4'-DDE	50 – 150
Endrin	50 – 120
Endosulfan sulfate	50 – 120
trans-Chlordane	30 – 130
Tetrachloro-m-xylene (surrogate)	30 – 150
Decachlorobiphenyl (surrogate)	30 – 150

LCS I	D	COMPOUND	% R	QC LIMIT
%_recov	ery_and_F	RPD_within_laboratory_	_control_limits	
/6_TECUV	reiy_allu_r	KPD_Within_taboratory_		

Action

The following guidance is suggested for qualifying sample data for which the associated LCS does not meet the required criteria.

- a. If the LCS recovery exceeds the upper acceptance limit, qualify detected target compounds as estimated (J). Do not qualify non-detected target compounds.
- b. If the LCS recovery is less than the lower acceptance limit, qualify detected target compounds as estimated (J) and non-detects as unusable (R).
- c. Use professional judgment to qualify data for compounds other than those compounds that are included in the LCS.
- d. Use professional judgment to qualify non-LCS compounds. Take into account the compound class, compound recovery efficiency, analytical problems associated with each compound, and comparability in the performance of the LCS compound to the non-LCS compound.
- e. If the LCS recovery is within allowable limits, no qualification of the data is necessary.

2. Frequency Criteria:

Where LCS analyzed at the required frequency and for each matrix? <u>Yes</u> or No. If no, the data may be affected. Use professional judgment to determine the severity of the effect and qualify data accordingly. Discuss any actions below and list the samples affected.

All criteria were met
Criteria were not met
and/or see belowN/A

FLORISIL CARTRIDGE PERFORMANCE CHECK

NOTE: Florisil cartridge cleanup is mandatory for all extracts.

Criteria

Is the Florisil cartridge performance check conducted at least once on each lot of cartridges used for sample cleanup or every 6 months, whichever is most frequent? Yes? or No? N/A

Criteria

Are the results for the Florisil Cartridge Performance Check solution included with the data package?

Yes? or No? N/A

Note: If % criteria are not met, examine the raw data for the presence of polar interferences and use professional judgment in qualifying the data as follows:

Action:

- a. If the Percent Recovery is greater than 120% for any of the pesticide target compounds in the Florisil Cartridge Performance Check, qualify detected compounds as estimated (J). Do not qualify non-detected target compounds.
- b. If the Percent Recovery is greater than or equal to 80% and less than or equal to 120% for all the pesticide target compounds, no qualification of the data is necessary.
- c. If the Percent Recovery is greater than or equal to 10% and less than 80% for any of the pesticide target compounds in the Florisil Cartridge Performance Check, qualify detected target compounds as estimated (J) and non-detected target compounds as approximated (UJ).
- d. If the Percent Recovery is less than 10% for any of the pesticide target compounds in the Florisil Cartridge Performance Check, qualify detected compounds as estimated (J) and qualify non-detected target compounds as unusable (R).
- e. If the Percent Recovery of 2,4,5-trichlorophenol in the Florisil Cartridge Performance Check is greater than or equal to 5%, use professional judgment to qualify detected and non-detected target compounds, considering interference on the sample chromatogram.

Note: State in the Data Review Narrative potential effects on the sample data resulting from the Florisil Cartridge Performance Check analysis not yielding acceptable results.

Note:_ No information for Florisil cartridge performance check included in data package.

There is evidence that Florisil cartridge was used for sample extraction/clean-up. No qualification of the data performed, professional judgment.

All criteria were met	
Criteria were not met	
and/or see below	

GEL PERMEATION CHROMATOGRAPHY (GPC) PERFORMANCE CHECK

NOTE: GPC cleanup is mandatory for all soil samples.

If GPC criteria are not met, examine the raw data for the presence of high molecular weight contaminants; examine subsequent sample data for unusual peaks; and use professional judgment in qualifying the data. Notify the Contract Laboratory Program Project Officer (CLP PO) if the laboratory chooses to analyze samples under unacceptable GPC criteria.

Action:

- a. If the Percent Recovery is less than 10% for the pesticide compounds and surrogates during the GPC calibration check, the non-detected target compounds may be suspect, qualify detected compounds as estimated (J).
- b. If the Percent Recovery is less than 10% for the pesticide compounds and surrogates during the GPC calibration check, qualify all non-detected target compounds as unusable (R).
- c. If the Percent Recovery is greater than or equal to 10% and is less than 80% for any of the pesticide target compounds in the GPC calibration, qualify detected target compounds as estimated (J) and non-detected target compounds as approximated (UJ).
- d. If the Percent Recovery is greater than or equal to 80% and less than or equal to 120% for all the pesticide target compounds, no qualification of the data is necessary.
- e. If high recoveries (i.e., greater than 120%) were obtained for the pesticides and surrogates during the GPC calibration check, qualify detected compounds as estimated (J). Do not qualify non-detected target compounds.

Note: State in the Data Review Narrative potential effects on the sample data resulting from the GPC cleanup analyses not yielding acceptable results.

Note: No information for performance of GPC cleanup included in data package. No qualification of the data performed, professional judgment.

All criteria were met _	_X
Criteria were not met	
and/or see below	

TARGET COMPOUND IDENTIFICATION

Criteria:

- 1. Is Retention Times (RTs) of both of the surrogates and reported target compounds in each sample within the calculated RT Windows on both columns?

 Yes? or No?
- 2. Is the Tetrachloro-m-xylene (TCX) RT ±0.05 minutes of the Mean RT (RT) determined from the initial calibration and Decachlorobiphenyl (DCB) within ±0.10 minutes of the RT determined from the initial calibration?

 Yes? or No?
- 3. Is the Percent Difference (%D) for the detected mean concentrations of a pesticide target compound between the two Gas Chromatograph (GC) columns within the inclusive range of ± 25.0 %?

 Yes? or No?
- 4. When no analytes are identified in a sample; are the chromatograms from the analyses of the sample extract and the low-point standard of the initial calibration associated with those analyses on the same scaling factor?

 Yes? or No?
- 5. Does the chromatograms display the Single Component Pesticides (SCPs) detected in the sample and the largest peak of any multi-component analyte detected in the sample at less than full scale.

 Yes? or No?
- 6. If an extract is diluted; does the chromatogram display SCPs peaks between 10-100% of full scale, and multi-component analytes between 25-100% of full scale? Yes? or No? N/A
- 7. For any sample; does the baseline of the chromatogram return to below 50% of full scale before the elution time of alpha-BHC, and also return to below 25% of full scale after the elution time of alpha-BHC and before the elution time of DCB?

 Yes? or No?
- 8. If a chromatogram is replotted electronically to meet these requirements; is the scaling factor used displayed on the chromatogram, and both the initial chromatogram and the replotted chromatogram submitted in the data package.

 Yes? or No?

Action:

- a. If the qualitative criteria for both columns were not met, all target compounds that are reported as detected should be considered non-detected.
- b. Use professional judgment to assign an appropriate quantitation limit using the following guidance:
 - If the detected target compound peak was sufficiently outside the pesticide RT Window, the reported values may be a false positive and should be replaced with the sample Contract Required Quantitation Limits (CRQL) value.

- ii. If the detected target compound peak poses an interference with potential detection of another target peak, the reported value should be considered and qualified as unusable (R).
- c. If the data reviewer identifies a peak in both GC column analyses that falls within the appropriate RT Windows, but was reported as a non-detect, the compound may be a false negative. Use professional judgment to decide if the compound should be included.

Note: State in the Data Review Narrative all conclusions made regarding target compound identification.

- d. If the Toxaphene peak RT windows determined from the calibration overlap with SCPs or chromatographic interferences, use professional judgment to qualify the data.
- e. If target compounds were detected on both GC columns, and the Percent Difference between the two results is greater than 25.0%, consider the potential for coelution and use professional judgment to decide whether a much larger concentration obtained on one column versus the other indicates the presence of an interfering compound. If an interfering compound is indicated, use professional judgment to determine how best to report, and if necessary, qualify the data according to these guidelines.
- f. If Toxaphene exhibits a marginal pattern-matching quality, use professional judgment to establish whether the differences are due to environmental "weathering" (i.e., degradation of the earlier eluting peaks relative to the later eluting peaks). If the presence of Toxaphene is strongly suggested, report results as presumptively present (N).

GAS CHROMATOGRAPH/MASS SPECTROMETER (GC/MS) CONFIRMATION

NOTE: This confirmation is not usually provided by the laboratory. In cases where it is provided, use professional judgment to determine if data qualified with "C" can be salvaged if it was previously qualified as unusable (R).

Action:

- a. If the quantitative criteria for both columns were met (\geq 5.0 ng/ μ L for SCPs and \geq 125 ng/ μ L for Toxaphene), determine whether GC/MS confirmation was performed. If it was performed, qualify the data using the following guidance:
 - If GC/MS confirmation was not required because the quantitative criteria for both columns was not met, but it was still performed, use professional judgment when evaluating the data to decide whether the detect should be qualified with "C".
 - ii. If GC/MS confirmation was performed, but unsuccessful for a target compound detected by GC/ECD analysis, qualify those detects as "X".

All criteria were met	_X
Criteria were not met	
and/or see below	-2

COMPOUND QUANTITATION AND REPORTED CONTRACT REQUIRED QUANTITATION LIMITS (CRQLS)

The sample quantitation evaluation is to verify laboratory quantitation results. In the space below, please show a minimum of one sample calculation:

JC36	373-1	Tetrachlorobiphenyl	RF =0.946
[]	=	(293.4 x 106)(50)/(425.2 x 106)(0.946)	
	=	36.5 ppb Ok	

Note: Hepthachlor in sample JC36373-3 more than 40 % RPD concentration between the two columns. Heptachlor detected above the MDL but below the RL, the laboratory qualified the result with a J qualifier. No additional qualification performed.

gamma-BHC in sample JC36373-7 more than 40 % RPD concentration between the two columns, gamma-BHC detected above the MDL but below the RL, the laboratory qualified the result with a J qualifier. No additional qualification performed.

Action:

- a. If sample quantitation is different from the reported value, qualify result as unusable (R).
- b. When a sample is analyzed at more than one dilution, the lowest CRQLs are used unless a QC exceedance dictates the use of the higher CRQLs from the diluted sample.
- c. Replace concentrations that exceed the calibration range in the original analysis by crossing out the "E" and its corresponding value on the original reporting form and substituting the data from the diluted sample.
- d. Results between the MDL and CRQL should be qualified as estimated (J).
- e. Results less than the MDL should be reported at the CRQL and qualified (U). MDLs themselves are not reported.
- f. For non-aqueous samples, if the percent moisture is less than 70.0%, no qualification of the data is necessary. If the percent moisture is greater than or equal to 70.0% and less than 90.0%, qualify detects as estimated (J) and non-detects as approximated (UJ). If the percent moisture is greater than or equal to 90.0%, qualify detects as estimated (J) and non-detects as unusable (R) (see Table).

Percent Moisture Actions for Pesticide Analysis for Non-Aqueous Samples

Criteria		Action		
	Detected Associated Compounds	Non-detected Associated Compounds		
% Moisture < 70.0	No qualification			
70.0 < % Moisture < 90.0	J	UJ		
% Moisture > 90.0	J	R		

	_	

Note: If any discrepancies are found, the Region's designated representative may contact the laboratory to obtain additional information that could resolve any differences. If a discrepancy remains unresolved, the reviewer must use professional judgment to decide which value is the most accurate. Under these circumstances, the reviewer may determine that qualification of data is warranted. Note in the Data Review Narrative a description of the reasons for data qualification and the qualification that is applied to the data.

Dilution performed

SAMPLE ID	DILUTION FACTOR	REASON FOR DILUTION
		<u> </u>
	<u> </u>	
		· · · · · · · · · · · · · · · · · · ·
,		
		+
		-
	1	

All criteria were metN/A_	
Criteria were not met	
and/or see below	

FIELD DUPLICATE PRECISION

NOTE: In the absence of QAPP guidance for validating data from field duplicates, the following action will be taken.

Field duplicates samples may be taken and analyzed as an indication of overall precision. These analyses measure both field and lab precision; therefore, the results may have more variability than laboratory duplicates which only laboratory performance. It is also expected that soil duplicate results will have a greater variance than water matrices due to difficulties associated with collecting identical field duplicate samples. Identify which samples within the data package are field duplicates. Estimate the relative percent difference (RPD) between the values for each compound. If large RPDs (> 50%) is observed, confirm identification of samples and note difference in the executive summary.

Sample IDs:	:	-		Mat	rix:	
COMPOUND	SQL	SAMPLE	DUPLICATE	RPD	ACTION	
	ug/L	CONC.	CONC.			
-						
No field/laboratory duplicate analyzed with this data package. MS/MSD % recovery RPD used to						
assess precision. RPD within the required criteria of < 50 %.						

Actions:

- a. Qualify as estimated positive results (J) and nondetects (UJ) for the compound that exceeded the above criteria. For organics, only the sample and duplicate will be qualified.
- b. If an RPD cannot be calculated because one or both of the sample results is not detected, the following actions apply:
 - i. If one sample result is not detected and the other is greater than 5x the SQL qualify (J/UJ).
 - ii. If one sample value is not detected and the other is greater than 5x the SQL and the SQLs for the sample and duplicate are significantly different, use professional judgment to determine if qualification is appropriate.
 - iii. If one sample value is not detected and the other is less than 5x, use professional judgment to determine if qualification is appropriate.
 - iv. If both sample and duplicate results are not detected, no action is needed.

OVERALL ASSESSMENT OF DATA Action:

- 1. Use professional judgment to determine if there is any need to qualify data which were not qualified based on the Quality Control (QC) criteria previously discussed.
- 2. Write a brief narrative to give the user an indication of the analytical limitations of the data.

Note: The Contract Laboratory Program Project Officer (CLP PO) must be informed if any inconsistency of the data with the Sample Delivery Group (SDG) Narrative. If sufficient information on the intended use and required quality of the data is available, the reviewer should include their assessment of the usability of the data within the given context. This may be used as part of a formal Data Quality Assessment (DQA).

Overall assessment of the data: Results are valid; the data can be used for decision

making purposes.

EXECUTIVE NARRATIVE

SDG No: JC36373 Laboratory: Accutest, New Jersey

Analysis: SW846-8015C Number of Samples: 5

Location: BMSMC, Humacao, PR

SUMMARY: Five (5) samples were analyzed for the trace metals following method SW846-6010C and

SW846-7470A/7471B for Hg. The sample results were assessed according to USEPA data validation guidance documents in the following order of precedence: Hazardous Waste Support Section SOP NO. HW-3b Revision O (July 2015) ISMO2 ICP-MS Data Validation; USEPA Contract Laboratory program National Functional Guidelines for Inorganic data Review (OSWER 9240.1-45, EPA 540-R-04-004, October 2004- Final). Validation of Metal for the Contract Laboratory Program (CLP) (SOP HW-2, Revision 13. Based on ILM05.3 (August 2009). Quality control validation criteria were derived from "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW-846 (Final Update IV, 1998)". The QC criteria and data validation actions listed on the data review worksheets are from the primary guidance document, unless otherwise noted.

Results are valid and can be used for decision making purposes.

Critical issues:

Major: Minor: None None

None

Critical findings: Major findings:

None None

Minor findings:

- 1. Target analytes not detected in the field/equipment blank except for the cases described in this document:
 - Al, Ba, Ca, Mn, Hg, and Na detected in the field blank at a concentration below the reporting limit. The laboratory qualified the results with a B qualifier. No further
 - Al, Ba, Ca, Mn, Hg and Na detected in the equipment blank at a concentration below the reporting limit.

The laboratory qualified the results with a B qualifier. No further qualification performed.

2. MS/MSD % recovery and RPD within laboratory control limits except for the cases described in the Data Review Worksheet. No action taken spike sample was from another job.

No MS/MSD sample analyzed for the aqueous matrix, except for Hg.

3. Positive results with concentration between the MDL and the reporting limit (RL) are qualified as estimated (J or UJ).

COMMENTS: Results are valid and can be used for decision making purposes.

Reviewers Name: Rafael Infante

Chemist License 1888

Signature:

Date: February 20, 201

SAMPLE METAL DATA SAMPLE SUMMARY

Sample ID: JC36373-4

Sample location: BMSMC, Humacao, PR

Sampling date: 25-Jan-17

Matrix: Soil

memor.	00100,747	10				
Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
Aluminum	11900	ug/kg	1.0	-	,	Yes
Antimony	0.42	ug/kg	1.0	В	JB] 🗸	/ Yes
Arsenic	5.3	ug/kg	1.0	-	-	Yes
Barium	92.9	ug/kg	1.0	-	-	Yes
Beryllium	0.25	ug/kg	1.0	-	-	Yes
Cadmium	0.66	ug/kg	1.0	-	•	Yes
Calcium	2200	ug/kg	1.0	-	-	Yes
Chromium	9.6	ug/kg	1.0	-	- /	Yes
Cobalt	5.6	ug/kg	1.0	В	JB √ ₁	Yes
Copper	20	ug/kg	1.0	-	-	Yes
Iron	16000	ug/kg	2.0	-	-	Yes
Lead	13.2	ug/kg	1.0	-	-	Yes
Magnesium	1410	ug/kg	1.0	-	-	Yes
Manganese	432	ug/kg	1.0	-	•	Yes
Mercury	0.14	ug/kg	1.0	-	- 1	/ Yes
Nickel	3.7	ug/kg	1.0	В	JB	Yes
Potassium	735	ug/kg	1.0	В	JB / y	Yes
Selenium	0.53	ug/kg	1.0	U	U	Yes
Silver	0.31	ug/kg	2.0	U	U	/ Yes
Sodium	73.3	ug/kg	1.0	В	JB 🔧	Yes
Thallium	0.45	ug/kg	1.0	U	U	Yes
Vanadium	44.8	ug/kg	1.0	-	-	Yes
Zinc	121	ug/kg	1.0	E.	-	Yes

Sample location: BMSMC, Humacao, PR

Sampling date: 25-Jan-17

Matrix: Soil

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
Aluminum	13000	ug/kg	1.0	-	-	Yes
Antimony	0.32	ug/kg	1.0	-	U	Yes
Arsenic	5.4	ug/kg	1.0	-	-	Yes
Barium	107	ug/kg	1.0	-	-	Yes
Beryllium	0.25	ug/kg	1.0	-	-	Yes
Cadmium	0.73	ug/kg	1.0	-	-	Yes
Calcium	2500	ug/kg	1.0	-	-	Yes
Chromium	16.4	ug/kg	1.0	•	-	Yes
Cobalt	6.5	ug/kg	1.0	-	-	Yes
Copper	22.3	ug/kg	1.0	-	-	Yes
Iron	18100	ug/kg	1.0	-	•	Yes
Lead	14.2	ug/kg	1.0	-	-	Yes
Magnesium	1710	ug/kg	1.0	-	-	Yes
Manganese	512	ug/kg	1.0	-	-	Yes
Mercury	0.330	ug/kg	1.0	-	-	Yes
Nickel	8.0	ug/kg	1.0	-	/	Yes
Potassium	891	ug/kg	1.0	В	JB 🗸	Yes
Selenium	0.63	ug/kg	1.0	В	JB V	Yes
Silver	0.26	ug/kg	1.0	В	JB /	Yes
Sodium	83.8	ug/kg	1.0	В	JB /	Yes
Thallium	0.45	ug/kg	1.0	В	JB 🗸	Yes
Vanadium	52.0	ug/kg	1.0	-	-	Yes
Zinc	129	ug/kg	1.0	-	-	Yes

Sample location: BMSMC, Humacao, PR

Sampling date: 25-Jan-17

Matrix: Soil

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
Aluminum	22700	ug/kg	1.0	-	-	Yes
Antimony	0.36	ug/kg	1.0	-	U	Yes
Arsenic	5.2	ug/kg	1.0	-	-	Yes
Barium	116	ug/kg	1.0	-	-	Yes
Beryllium	0.25	ug/kg	1.0	-	-	Yes
Cadmium	0.29	ug/kg	1.0	В	JB √	/ Yes
Calcium	4130	ug/kg	1.0	-	-	Yes
Chromium	16.1	ug/kg	1.0	-	-	Yes
Cobalt	11.5	ug/kg	1.0	-	-	Yes
Copper	48.8	ug/kg	1.0	-	-	Yes
Iron	25500	ug/kg	1.0	-	-	Yes
Lead	8.8	ug/kg	1.0	-	-	Yes
Magnesium	3110	ug/kg	1.0	-	-	Yes
Manganese	625	ug/kg	1.0	-	57	Yes
Mercury	0.04	ug/kg	1.0	-	-	Yes
Nickel	6.9	ug/kg	1.0	-	- /	Yes
Potassium	665	ug/kg	1.0	В	JB 🗸	Yes
Selenium	0.75	ug/kg	1.0	В	JB 🗸	Yes
Silver	0.52	ug/kg	1.0	В	JB V	Yes
Sodium	206	ug/kg	1.0	В	JB V	Yes
Thallium	1.1	ug/kg	1.0	В	JB 🗸 🧸	Yes
Vanadium	85.9	ug/kg	1.0	-	_	Yes
Zinc	61.1	ug/kg	1.0	-	-	Yes

Sample location: BMSMC, Humacao, PR

Sampling date: 25-Jan-17

Matrix: AQ -Equipment Blank

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
Aluminum	35.2	ug/l	1.0	В	JB 🗸	Yes
Antimony	3.3	ug/l	1.0	U	U	Yes
Arsenic	2.2	ug/l	1.0	U	U	Yes
Barium	1.4	ug/l	1.0	В	JB 🗸	Yes
Beryllium	0.25	ug/l	1.0	U	U	Yes
Cadmium	0.4	ug/l	1.0	U	U	Yes
Calcium	283	ug/l	1.0	В	JB ✓	Yes
Chromium	0.81	ug/l	1.0	U	U	Yes
Cobalt	0.69	ug/l	1.0	U	U	Yes
Copper	2.4	ug/l	1.0	U	U	Yes
Iron	12	ug/l	1.0	U	U	Yes
Lead	2.3	ug/l	1.0	U	U	Yes
Magnesium	85	ug/l	1.0	U	U	Yes
Manganese	8.8	ug/l	1.0	В	JB √	Yes
Mercury	0.056	ug/l	1.0	В	JB	Yes
Nickel	0.76	ug/l	1.0	U	U	Yes
Potassium	120	ug/l	1.0	U	U	Yes
Selenium	4.1	ug/l	1.0	U	U	Yes
Silver	0.88	ug/l	1.0	U	U	Yes
Sodium	208	ug/l	1.0	В	JB	Yes
Thallium	1.9	ug/l	1.0	U	U	Yes
Vanadium	0.66	ug/l	1.0	U	U	Yes
Zinc	1.3	ug/l	1.0	U	U	Yes

Sample location: BMSMC, Humacao, PR

Sampling date: 25-Jan-17

Matrix: AQ - Field Blank Soil

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
Aluminum	25.3	ug/l	1.0	В	JB	Yes
Antimony	3.3	ug/l	1.0	Ų	U	Yes
Arsenic	2.2	ug/l	1.0	U	U	Yes
Barium	1.7	ug/l	1.0	7/1 B	JB ✓	Yes
Beryllium	0.25	ug/l	1.0	U	U	Yes
Cadmium	0.4	ug/l	1.0	U	U	Yes
Calcium	326	ug/l	1.0	В	JB	Yes
Chromium	0.81	ug/l	1.0	U	U	Yes
Cobalt	0.69	ug/l	1.0	U	U	Yes
Copper	2.4	ug/l	1.0	U	U	Yes
Iron	12	ug/l	1.0	U	U	Yes
Lead	2.3	ug/l	1.0	U	U	Yes
Magnesium	85	ug/l	1.0	U	U	Yes
Manganese	9.1	ug/l	1.0	8	JB 🗸	Yes
Mercury	0.059	ug/l	1.0	В	_JB ✓	Yes
Nickel	0.76	ug/l	1.0	U	U	Yes
Potassium	120	ug/l	1.0	U	U	Yes
Selenium	4.1	ug/l	1.0	U	U	Yes
Silver	0.88	ug/l	1.0	U	U	Yes
Sodium	205	ug/l	1.0	В	JB √	Yes
Thallium	1.9	ug/l	1.0	U	U	Yes
Vanadium	0.66	ug/l	1.0	U	U	Yes
Zinc	1.3	ug/l	1.0	U	U	Yes

Type of validation	Full:X Limited: EPA Region:2_	Project Number:JC36373 Date:01/25/17 Date shipped:01/26/17						
1								
The following guidel sulfide, and/or cyanic assist the reviewer in serving the needs of validation guidance of Section SOP NO. HW Laboratory program 45, EPA 540-R-04-0 Program (CLP) (SOI validation criteria wer Methods SW-846 (Finformation (if availal	ines for evaluating metale were created to deline using professional judgrathe data users. The samplocuments in the following 1-3b Revision 0 (July 2015) National Functional Guide 104, October 2004- Final P HW-2, Revision 13. Ee derived from "Test Metalinal Update IV, 1998)".	als analyses (6010C/6020/7000A series method) eate required validation actions. This document will ment to make more informed decision and in better ole results were assessed according to USEPA data growing order of precedence: Hazardous Waste Support 15) ISM02 ICP-MS Data Validation; USEPA Contract elines for Inorganic data Review (OSWER 9240.1-17). Validation of Metal for the Contract Laboratory Based on ILM05.3 (August 2009). Quality control hods for Evaluating Solid Waste, Physical/Chemical The project QAPP is reviewed for project specific data validation actions listed on the data review turnent, unless otherwise noted.						
The hardcopied (later reviewed and the quinorganic included:	oratory name) _Accute uality control and perfo	est data package received has been primance data summarized. The data review for						
No. of Samples: Field blank No.: Equipment blank No.:	.:JC36373 5 JC36373-10 :JC36373-9 JC36373-4/ JC3	Sample matrix:Soil						
X Data deliverX Holding TimX CalibrationsX BlanksX ICP InterferX Matrix Spike	rables nes s ence Check Results e/Matrix Spike Duplicate	X Laboratory DuplicatesX Field DuplicatesX Laboratory Control SamplesX ICP Serial Dilution ResultsX Detection Limits Results						
	wietai_Ailaiyais_(000040-							
Definition of Qualifiers								
J- Estimated res U- Compound no R- Rejected data UJ- Estimated no E- Laboratory of	ot detected a n-detect							
Date:02/20/2017	Date:02/20/2017							

		All criteria were metX Criteria were not met and/or see below
I. DATA DELIVERABLE	S	
A. Data Package	: :	
MISSING INFORMATION	DATE LAB. CONTACTED	DATE RECEIVED
21 (21940)		
B. Other Discrep	ancies:	18

All criteria were metX
Criteria were not met
and/or see below

HOLDING TIMES

The objective of this parameter is to ascertain the validity of the results based on the holding time of the sample from time of collection to the time of preparation, and subsequently from the time of preparation to the time of analysis.

Complete table for all samples and circle the analysis date for samples not within criteria

SAMPLE ID	DATE SAMPLED	CYANIDE DATE ANALYSIS	Hg DATE ANALYSIS	OTHERS DATE ANALYSIS	рН	SULFIDE	ACTION
SAMPLES	DIGESTED AI	ND ANALYZE	D WITHIN T	HE METHO	D REC	OMMENDE	ED HOLDING
]			

Criteria

Metals – 180 days from time of collection.
Mercury – 28 days from time of collection.
Hexavalent Chromium (solids)- 30/7 from day of collection; 48 hrs aqueous samples
Cyanide – 14 days from time of collection
Sulfide - 14 days from time of collection
pH measurements of aqueous samples upon receipt at the laboratory (criteria pH ≤ 2 for metals
pH ≥ 12 for cyanide)
pH ≥ 12 for cyanide)

Actions: Qualify positive results/nondetects as follows:

If holding times are exceeded, estimate positive results (J) and rejects nondetects (R).
If pH > 2 for metals or pH < 12 for cyanide, positive results (J) and nondetects (UJ).
Cooler Temperature (Criteria: 4°C + 2°C):3.6°C
If cooler temperature is > 10°C, flag non-detects as (UJ) and detects as (J).

All criteria were met _	_N/A
Criteria were not met	
and/or see below	

ICP-MS TUNE ANALYSIS

Is the ICP-MS tuned prior to calibration?

Yes or No?

Does the % RSD exceeds 5% for any isotope in the tuning solution?

Yes or No?

Action:

NOTES: For ICP-MS tunes that do not meet the technical criteria, apply the action to all samples reported from the analytical run.

- 1. If the ICP-MS instrument was not tuned prior to calibration, the sample data should be qualified as unusable (R).
- 2. If the tuning solution was not analyzed or scanned at least 5x consecutively or the tuning solution does not contain the required analytes spanning the analytical range, the reviewer should use professional judgment to determine if the associated sample data should be qualified. The reviewer may need to obtain additional information from the laboratory. The situation should be recorded in the Data Review Narrative and noted for Contract Laboratory Program Project Officer (CLP PO) action.
- 3. If the resolution of the mass calibration is not within 0.1 u for any isotope in the tuning solution, qualify all analyte results that are ≥ Method Detection Limit (MDL) associated with that isotope as estimated (J), and all non-detects associated with that isotope as estimated (UJ). The situation should be recorded in the Data Review Narrative and noted for CLP PO action.
- 4. If the %RSD exceeds 5% for any isotope in the tuning solution, qualify all sample results that are ≥ MDL associated with that tune as estimated (J), and all non-detects associated with that tune as estimated (UJ). The situation should be recorded in the Data Review Narrative and noted for CLP PO action.

Table 2. ICP-MS Tune Actions for ICP-MS Analysis

ICP-MS Tune Results	Action for Samples	
Tune not performed	Qualify all results as unusable (R)	
Tune not performed properly	Use professional judgment	
Resolution of mass calibration not within 0.1u	Qualify results that are ≥ MDL as estimated (J)	
	Qualify non-detects as estimated (UJ)	
% RSD > 5%	Qualify results that are ≥ MDL as estimated (J)	
	Qualify non-detects as estimated (UJ)	

Note:

All criteria were metX
Criteria were not met
and/or see below

INSTRUMENT CALIBRATION (SECTION 1)

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing and maintaining acceptable quantitative data. Minimum of 2 calibration points for ICP-AES and ICP-MS; 5 points for Hg; and 4 points for cyanide. One initial calibration standard at the CRQL level for cyanide and Hg. If no, write in the non-compliance section of the data review narrative.

List the analytes which did not meet the percent recovery (%R) criteria for Initial or Continuing Calibration Verification standards (ICV or CCV).

Acceptance Criteria	ICV %R	CCV %R
Metals by 6010C/6020	100 + 10%	100 + 10%
Mercury/Metals by 7000s	100 + 10%	100 + 20%
Cyanide	100 + 15%	100 + 15%
Sulfide	100 + 15%	100 + 15%

DATE	ICV/CCV#	ANALYTE	%R	ACTION	SAMPLES AFFECTED
INITI	AL AND CONTI	NUING CALIBRA	N NOITA	IEET METHOD SPEC	IFIC CRITERIA

ACTIONS: If any analyte does not meet the %R criteria, follow the actions stated below. Qualify five samples on either side of the ICV/CCV out of control limit.

Estimate positive results (J) if:	ICV	CCV
Metals by 6010C/6020	111 – 125%	111 – 125%
Mercury/Metals by 7000s	111 – 125%	111 – 135%
Cyanide	116 – 130%	116 130%
Sulfide	116 – 130%	116 – 130%
Estimate positive results and nondetects (U/UJ) if:	
Metals by 6010C/6020	75 – 89%	75 – 89%
Mercury/Metals by 7000s	75 – 89%	65 – 79%
Cyanide	70 – 84%	70 – 84%
Sulfide	70 – 84%	70 – 84%
Reject positive results and nondetects (R)	if:	
Metals by 6010C/6020	<75%, >125%	<75%, >125%
Mercury/Metals by 7000s	<75%, >125%	<65%, >135%
Cyanide	<70%, >130%	<70%, >130%
Sulfide	<70%, >130%	<70%, >130%

All criteria were metX
Criteria were not met
and/or see below

- III. INSTRUMENT CALIBRATIONS (SECTIONS 2 & 3)
- 2. Analytical Sequence

Did the laboratory use the proper number of standards for calibration as described in the method?

Yes or No.

B. Were calibrations performed at the beginning of each analysis?

Yes or No

Were calibration verification standards analyzed at the beginning of sample analysis and the proper frequency according to the method?

Yes or No

D. Where the AA correlation coefficients (r) for the calibration curves
 ≥ 0.995? If r < 0.995, estimate positive results and nondetects (J/UJ).
 It is not necessary to qualify results if the laboratory used order regression.

Yes or No.

Data quality may be affected if any of the above answer are "no". Use professional judgment to determine the severity of the effect and qualify the data accordingly. Discuss any actions below and list the sample affected.

3. Other Check Standards

Laboratories may analyze an additional check standard after establishing the calibration curve. This standard may contain low level concentrations of target analytes and be analyzed and evaluated by the laboratory similar to a CLP "CRLD" standard (CRI for ICP, CRA for AA, and/or mid-range standard for CN and Sulfide). A 100 ± 20% recovery acceptance limit should be used by the validator to evaluate the standard.

ACTIONS: If any analyte does not meet the %R criteria, follow the action needed below. Qualify 50% of either side of the CRI/CRA out of control limits.

% R		%R < 50%	%R = 79%	50-	%R = 150%	121-	%R > 150%	Affected Range
Qualify Positi	ve/N	ondetects Res	ults					•
Metals 6010C/6020	by	R/R	J/UJ		J/A		R/A	<2x CRI conc.
Hg/metals 7000s	by	R/R	J/UJ		J/A		R/A	<1.5x CRI conc.
Cyanide		R/R	J/UJ		J/A		R/A	<1.5x mid std. conc.
Sulfide		R/R	J/UJ	1	J/A		R/A	<1.5x mid std. conc.

CRI is not required for AI, Ba, Ca, Fe, Mg, Na, and K.

NOTE: CRLD standard within laboratory and method specific criteria.

All criteria were metN/A
Criteria were not me
and/or see below

Table 4. Calibration Actions for ICP-MS Analysis

Calibration Result	Action for Samples
Calibration not performed	Qualify all results as unusable (R)
Calibration incomplete	Use professional judgment Qualify results that are ≥ MDL as estimated (J)
Not at least one calibration standard at or	Qualify non-detects as estimated (UJ) Qualify results that are ≥ MDL but < 2x the
below the CRQL for each analyte	CRQL as estimated (J) Qualify non-detects as estimated (UJ)
Correlation coefficient < 0.995; %D outside ±30%; y-intercept ≥ CRQL	Qualify results that are ≥ MDL as estimated (J) Qualify non-detects as estimated (UJ)
Correlation coefficient < 0.990	Qualify results that are ≥ MDL as estimated (J) Qualify non-detects as unusable (R)
ICV/CCV %R < 75%	Qualify results that are ≥ MDL as unusable (R) Qualify all non-detects as unusable (R)
ICV/CCV %R 75-89%	Qualify results that are ≥ MDL as estimated low (J-) Qualify non-detects as estimated (UJ)
ICV/CCV %R 111-125%	Qualify results that are ≥ MDL as estimated high (J+)
ICV/CCV %R > 125%	Qualify results that are ≥ MDL as estimated high (J+)
ICV/CCV %R > 160%	Qualify results that are ≥ MDL as unusable (R)

All criteria were met	
Criteria were not me	1
and/or see belowX	

IV. BLANK ANALYSIS RESULTS (Sections 1 & 2)

The assessment of the blank analysis results is to determine the existence and magnitude of contamination problems. The criteria for evaluation of blanks apply only to blanks associated with the samples, including equipment, field, and laboratory blanks. If problems with any blanks exist, all data associated with the case must be carefully evaluated to determine whether or not there is an inherent variability in the data for the case, or if the problem is an isolated occurrence not affecting other data.

List the contamination in Sections 1 & 2 below. A separate worksheet page should be used for soil and water blanks.

Laboratory blant	KS		Matrix:Ac	queous		
DATE ANALYZED	ICB/CCB#	PREP BLK	ANALYTE	CONCENTRATION UNITS		
No_analyte_c	letected_in_met	hod_blanks	_above_reporting_limits			
Field/Equipment			Matrix:Ac	Matrix:Aqueous		
DATE ANALYZED	EQUIPMENT BLANK	T/FIELD	ANALYTE	CONCENTRATION UNITS		
Field/equipme	ent_blank_analy:	zed_as_par	t_of_this_data_package 			
			15.			

Note: Target analytes not detected in the field/equipment blank except for the cases described in this document:

- Al, Ba, Ca, Mn, Hg, and Na detected in the field blank at a concentration below the reporting limit. The laboratory qualified the results with a B qualifier. No further
- Al, Ba, Ca, Mn, Hg and Na detected in the equipment blank at a concentration below the reporting limit.

The laboratory qualified the results with a B qualifier. No further qualification performed.

Table. Field/Rinsate/Trip Blank Actions for ICP-MS Analysis

Blank Result	Sample Result	Action for Samples
> CRQL	≥ MDL but ≤ CRQL	Report CRQL value with a "U"
	> CRQL but < Blank Result	Report at level of Blank Result with a "U"
	> Blank Result but < 10x the Blank Result	Use professional judgment to qualify results as estimated (J)

	•	All criteria were metX_ Criteria were not m and/or see below	et
IV.	BLANK ANALYSIS RESULTS (Section 3)		
Freque	ency requirements		
at the f	ne preparation blank analyzed for each matrix, frequency of the method? stimate positive results < 10x IDL for which preparation blank we than 20 samples/batch, qualification begins at the 21 st sample.	Yes or No vas not analyzed.	
B.	Was an ICB analyzed?	Yes or No	
C.	Was a CCB analyzed at the frequency stated in the method?	Yes or No	
determ	uality may be affected if any of the above answer is "no". Us ine the severity of the effect and qualify the data accordingly. the samples affected.		
			_
			_
			_
		100	_
Compa	FOR SOIL SAMPLES are raw sample value with blank results in ug/L unit, or the blanks analyzed during a soil case to mg/Kg in order to come.	npare them with the samp	le
	In ug/L x [Volume diluted to (mL)]/[Weight digested] x 1L/1000 000 g = concentration in wet weight (mg/Kg)	mL x 1000g/1Kg	x
Concer	ntration, dry weight (mg/Kg) = (Wet weight concentration)/(% Sc	olids) x 100	
BLANK	ANALYSIS RESULTS (Sections 4,5)		
sample	ntamination remaining in the field or equipment blank will be us		

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			Criteria were not met and/or see below
4. Initial	//Continuing Cali	bration Blanks (ICB/C	CB) Actions
Are all ICB/C	CBs less than th	e SQL?	Yes or No
		either side of the ICB/ the ICB/CCB value.	CCB out of control limits.
ICB/CCB#	ANALYTE	CONC/UNITS	SAMPLES AFFECTED
Are the PB le	ss than the SQL		Yes or No
If yes, reject a	all results (R) < 1	0x the PB value.	
РВ	ANALYTE	CONC/UNITS	SAMPLES AFFECTED
BLANK ANAL	YSIS RESULTS	S (Section 6)	
6. Field/	Equipment Blan	k (FB/EB) Actions	
Are th	ne FB/EB less th	an the SQL?	Yes or No
If no, was the	FB/EB value alr	eady rejected due to	other QC criteria? Yes or No
If no, reject (F the FB/EB va		s <u>< 5</u> x the FB/EB valu	e. Reject soil data with raw digest results < 5x
РВ	ANALYTE	CONC/UNITS	SAMPLES AFFECTED
			-

All criteria were met __X___

All criteria were metN/A
Criteria were not met
and/or see below

Table 5. Calibration/Preparation Blank Actions for ICP-MS Analysis - Summary

Blank Type	Blank Result	Sample Result	Action for Samples	
ICB/CCB	≥ MDL but ≤ CRQL	Non-detect No action		
≥ MDL but ≤ CRQL		Report CRQL value with	a "U"	
> CRQL		Use professional judgme	ent	
ICB/CCB	> CRQL	≥ MDL but ≤ CRQL	Report CRQL value with a "U"	
> CRQL but < Blank Res	sult	Report at level of Blank	Result with a "U"	
> Blank Result		Use professional judgme	ent	
ICB/CCB	≤ (-MDL) but ≥ (-CRQL)	≥ MDL, or non-detect	Use professional judgment	
ICB/CCB	< (-CRQL)	< 10x the CRQL	Qualify results that are ≥ CRQL as estimated low (J-)	
			Qualify non-detects as estimated (UJ)	
Preparation Blank	> CRQL	≥ MDL but ≤ CRQL	Report CRQL value with a "U"	
> CRQL but < 10x the B	ank Result	Qualify results as estimated high (J+)		
≥ 10x the Blank Result		No action		
Preparation Blank	≥ MDL but ≤ CRQL	Non-detect	No action	
≥ MDL but ≤ CRQL		Report CRQL value with a "U"		
> CRQL	6789.7539	Use professional judgment		
Preparation Blank	< (-CRQL)	< 10x the CRQL	Qualify results that are ≥ CRQL as estimated low (J-)	
			Qualify non-detects as estimated (UJ)	

and/or see below	not met
INDUCTIVELY COUPLED PLASMA (ICP) INTERFERENCE CHECK SAMPLE	
The assessment of the ICP interference check sample (ICS) is to verify the labor interelement and background correction factors.	ratory's
1. Recovery Criteria	
List any elements in the ICS AB and ICS A solutions which did not meet the %R criteria (80%).	0 – 120
DATE ELEMENT %R ACTION SAMPLES AFFECTED	
_Interference_check_sample_within_method_performance_criteria	
ACTIONS:	
If an element does not meet the %R criteria, follow the actions stated below	
% R	
Qualify Positive/Nondetects Results	
Metals by R/R J/UJ J/A R/A 6010C/6020	
Frequency requirements Were interference QC samples run at the frequency stated in the method	
(beginning of the analytical run)? Yes or No	
If no, ACTIONS: Estimate positive results (J) all samples for which Al, Ca, Fe, Mg > ICS value.	
The data may be affected. Use professional judgment to determine the severity of the effequalify the data accordingly. Discuss any actions below and list the samples affected.	ect and

ΑII	criteria	were	met	tN	N/A_	
		Crit	eria	were	not	met
	а	nd/or	see	belov	N	

Table 6. Interference Check Actions for ICP-MS Analysis - Summary

Interference Check Sample Results	Action for Samples
ICS not analyzed	Qualify detects and non-detects as unusable (R)
ICS not analyzed in proper sequence	Use professional judgment.
ICS %R>150%	Use professional judgment
ICS %R > 120% (or greater than true value + 2x the CRQL)	Qualify results that are ≥ MDL as estimated high (J+)
ICS %R 80-12-%	No qualification
ICS %R 50-79% (or less than true value – 2x the CRQL)	Qualify results that are ≥ MDL as estimated low (J-)
	Qualify non-detects as estimated (UJ)
ICSAB %R < 50%	Qualify detects as estimated low (J-) and non- detects as unusable (R)
Potential false positives in field samples with interferents	Qualify results that are ≥ MDL as estimated high (J+)
Potential false negatives in field samples with interferents	Qualify results that are ≥ MDL but < 10x the (negative value) as estimated low (J-) Qualify non-detects as estimated (UJ)

All criteria v	vere i	met _		
Cri	teria [,]	were	not	met
and/or s	see b	elow	x	

VI. MATRIX SPIKE (MS)

Sample # _JC36373-4MS/-4MSD_(Hg)	Matrix:Soil	Units:ug/kg
Sample # _JC35815-1RS/-1RMSD	Matrix:Soil	Units:ug/kg
Sample # _JC36275-2AMS/-2AMSD_(Hg)_	Matrix:Aqueous	Units:ug/l

This data is generated to determine long term precision and accuracy in the analytical method for various matrices. Note that for Region 2, MS not required for: Ca, Mg, K, and Na for aqueous matrix; Al, Ca, Fe, Mg, K, Na, for soil matrix.

MS Recovery Criteria. List the percent recoveries for analytes which did not meet the %R criteria (75 – 125%); (85 – 115 % FOR Cr (VI)).

ANALYTE	SPIKE SAMPLE	SAMPLE	SPIKE	% R	ACTION
	RESULT (SSR)	RESULT (SR)	ADDED		
MS/MSD	recoveries and RPD	within laboratory	control lim	its except	t for the cases described in
		this do	cument.	•	
Al	19400	14400	2830	177.0	No action^*
Sb	0.53	141	226	62.1	No action
Ca	5670	9160	2830	-123.5	No action*
Fe	21200	21500	2830	-10.6	No action*
Mg	6300	6270	2830	1.1	No action*
Mn	471	430	226	18.1	No action
K	5100	790	2830	228.0	No action*
Na	3150	2660	2830	17.3	No action*
Zn	398	54.0	226	152.2	No action
Al	19000	14400	2830	162.8	No action^*
Sb	0.53	142	226	62.6	No action
Ва	68.4	417	226	152.4	No action
Ca	4990	9160	2830	-147.6	No action*
Fe	19600	21500	2830	-67.2	No action*
Mg	5900	6270	2830	-13.1	No action*
Mn	475	430	226	19.9	No action
K	4910	790	2830	145.8	No action*
Na	3160	2660	2830	17.7	No action*
Zn	387	54.0	226	147.3	No action

Note: ^- No action taken, sample concentration high compared to the amount spiked.

No action taken, spiked sample belongs to another job.

No MS/MSD sample analyzed for the aqueous matrix, except for Hg.

ACTIONS: Matrix spike actions apply to all samples of the same matrix. The qualification will also be applied to the results of all samples within a given area of the site, if deemed appropriate.

If the sample results $\geq 4x$ the spike concentration, no action is taken.

If any analyte does not meet the %R criteria, follow the actions stated below.

^{*-} Not required in EPA Region 2 for soil matrices.

Table 9. Spike Sample Actions for ICP-MS Analysis

Spike Sample Results	Action for Samples
Matrix Spike %R < 30% Post-digestion spike %R < 75%	Qualify affected results that are ≥ MDL as estimated low (J-) and affected non-detects as unusable (R)
Matrix Spike %R < 30% Post-digestion spike %R ≥ 75%	Qualify affected results that are ≥ MDL as estimated (J) and affected non-detects as estimated (UJ)
Matrix Spike %R 30-74% Post-digestion Spike %R < 75%	Qualify affected results that are ≥ MDL as estimated low (J-) and affected non-detects as estimated (UJ)
Matrix Spike %R 30-74% Post-digestion spike %R ≥ 75%	Qualify affected results that are ≥ MDL as estimated (J) and affected non-detects as estimated (UJ)
Matrix Spike %R > 125% Post-digestion spike %R > 125%	Qualify affected results that are ≥ MDL as estimated high (J+)
Matrix Spike %R > 125% Post-digestion spike %R ≤ 125%	Qualify affected results that are ≥ MDL as estimated (J)

Spike Sample Results	Action for Samples
Matrix Spike %R < 30% No post-digestion spike performed	Qualify affected results that are ≥ MDL as estimated low (J-) and affected non-detects as unusable (R)
Matrix Spike %R 30-74% No post-digestion spike performed	Qualify affected results that are ≥ MDL as estimated low (J-) and non-detects as estimated (UJ)
Matrix Spike %R > 125% No post-digestion spike performed	Qualify affected results that are ≥ MDL as estimated high (J+) Non-detects are not qualified

2. Frequency Criteria

A. Was a matrix spike prepared at the frequency stated in the method (1/20)? Yes or No

If no, estimate positive results (J) for which analyte was not spiked. If more than 20 samples/batch, qualification begins at the 21st sample.

B. Was a field blank used as spiked sample?

If yes, estimate positive results (J) < 4x spike level added for the analyte.

A separate worksheet page should be used for each matrix spike

Yes or No

		A	All criteria were metX Criteria were not met and/or see below
VII. FIE	ELD DUPLICATES		
Sample #:_	_JC36373-4/ JC36373-5	Matrix:Soil	Units:_ug/kg

Field duplicate samples may be taken and analyzed as an indication of overall precision. Field duplicate analyses measure both field and lab precision; therefore, the results may have more variability than laboratory duplicates which measure only laboratory performance. It is also expected that soil duplicate results will have a greater variance than water matrices due to difficulties associated with collecting identical field duplicate samples.

List the concentrations and RPDs in the field duplicate pair. RPD criteria: \pm 20% for aqueous; \pm 35% for soil. For soil duplicates, if the % solids for the sample and its duplicate differ by more than 1%, report concentrations in ug/L and calculate RPD or difference for each analyte.

ANALYTE	SQL ug/L	SQL ug/Kg	SAMPLE RESULTS	DUPLICATE RESULTS	RPD	ACTION
Al						
Sb						
As						
Ва	1					
Be						
Cd						
Ca	1					
Сг						
Со						
Cu						
Fe						
Pb						
Mg						
Mn	j					
Hg						
Ni						
K			!			
Se						
Ag						
Na						
TI						
V						
Zn						
Cyanide						
Cr(VI)						

Note: Field duplicates analyzed with data set. RPD within laboratory and generally acceptable control limits for analyte concentration > 5 x CRQL. No qualification made based on RPD results

Field duplicate actions should be applied to only the sample and its duplicate.

All criteria were metN/A	
Criteria were not m	et
and/or see below	

Actions: Indicates which criterion was used to evaluate precision by circling either the RPD or SQL for each element. If both sample and duplicate are nondetects, the RPD is not calculated (NC), no action is needed.

Table 8. Duplicate Sample Actions for ICP-MS Analysis

Duplicate Sample Results	Action for Samples
Aqueous: Both original sample and duplicate sample > 5x the CRQL and 20% < RPD < 100%	Qualify those results that are ≥ CRQL as estimated (J)
Aqueous: Both original sample and duplicate sample > 5x the CRQL and RPD ≥ 100%	Qualify those results that are ≥ CRQL as unusable (R)
Soil/Sediment: Both original sample and duplicate sample > 5x the CRQL and 35% < RPD < 120%	Qualify those results that are ≥ CRQL as estimated (J)
Soil/Sediment: Both original sample and duplicate sample > 5x the CRQL and RPD ≥ 120%	Qualify those results that are ≥ CRQL as unusable (R)
Original sample or duplicate sample ≤ 5x the CRQL (including non-detects) and absolute difference between sample and duplicate > CRQL	Qualify those results that are ≥ MDL as estimated (J) and non-detects as estimated (UJ)

A separate worksheet page should be used for each laboratory duplicate analysis

All criteria	were met	N/A_	
	Criteria w	ere not	met
an	d/or see b	elow	

Units: ___-_

VIII. LABORATORY DUPLICATES (Section 1)

Sample # _____-

Laboratory run duplicates samples to verify laboratory consistency and precision. They are a measure of laboratory performance. It is also expected that soil duplicate results will have a greater variance than water matrices due to difficulties associated with collecting identical field duplicate samples.

1. Difference Criteria

Cyanide

List the concentrations of any analyte not meeting the RPD criteria (\pm 20% for aqueous; \pm 35% for soil). For soil duplicates, if the % solids for the sample and its duplicate differ by more than 1%, report concentrations in $\Box g/L$ and calculate RPD or difference for each analyte.

Matrix:__-_

					egon agranous.	
ANALYTE	SQL ug/L	SQL mg/Kg	SAMPLE RESULTS	DUPLICATE RESULTS	RPD	ACTION
Al				T		
Sb						
As						
Ba						
Ве						
Cd						
Ca					Ì	
Cr				1		
Co						
Cu						
Fe						
Pb						
Mg	1					
Mn						
Hg						
Ni	1					
K						
Se	1					
Ag						
Na						
TI						
V						
Zn						
Cr(VI)						
Sulfide		†				

Note: No laboratory duplicate analyzed with this data package

Laboratory duplicates actions should be applied to all other samples of the same matrix type. This qualification will also be applied to the results of all samples within a given area of the site, if deemed appropriate.

All criteria were met __X_ Criteria were not met and/or see below ____

Actions: Indicates which criterion was used to evaluate precision by circling either the RPD or SQL for each element. If both sample and duplicate are non-detects, the RPD is not calculated (NC), no action is needed.

Table 8. Field Duplicate Sample Actions for ICP-MS Analysis

Sample Type	Field Duplicate Result	Action for Samples
Aqueous	Sample and its field duplicate ≥ 5x the CRQL and RPD > 20%	Qualify sample and its duplicate as estimated (J)
	Sample and/or its field duplicate < 5x the CRQL and absolute difference > the CRQL	Qualify results > the MDL as estimated (J) Qualify non-detects as estimated (UJ)
Soil/Sediment	Sample and its field duplicate ≥ 5x the CRQL and RPD > 50%	Qualify sample and its duplicate as estimated (J)
	Sample and/or its field duplicate < 5x the CRQL and absolute difference > 2x the CRQL	Qualify results > the MDL as estimated (J)
		Qualify non-detects as estimated (UJ)

2. Frequency Criteria

A. Was a laboratory duplicate prepared at the frequency stated in the method (1/20)? Yes or No

If no, estimate positive results (J) for the analyte which duplicate was not performed. If more than 20 samples/batch, qualification begins at the 21st sample.

B. Was a field blank used for laboratory duplicate analysis? Yes or No

If yes, estimate positive results (J) for the analyte if field blank was used for duplicate analysis.

All criteria were metX
Criteria were not met
and/or see below

IX. LABORATORY CONTROL SAMPLE (LCS/LCSD)

The assessment of the LCSs is to determine both intralaboratory contamination and matrix specific precision and accuracy. Note that for Region 2, LCS is not required for aqueous Hg and Cyanide.

LCS Recoveries Criteria

A. <u>Aqueous LCS</u>/Solid LCS

List any LCS recoveries not within %R criteria (80 – 120%) and the samples affected.

DATE	ELEMENT	% R	ACTION	SAMPLES AFFECTED
Recoverie	s_within_laboratory_co	ntrol_limits_		
	W 200			

ACTIONS: If analyte does not meet the %R criteria, follow the actions stated below:

Table 7. LCS Actions for ICP-MS Analysis

LCS Result	Action for Samples
%R 40-69%	Qualify results that are ≥ MDL as estimated low (J-) Qualify non-detects as estimated (UJ)
%R > 130%	Qualify results that are ≥ MDL as estimated high (J+)
%R 70-130%	No qualification
%R < 40%	Qualify results that are ≥ MDL as estimated low (J-) Qualify non-detects as unusable (R)
%R > 150%	Qualify detects as unusable (R); non- detects no qualification

All criteria were met	X
Criteria were	not met
and/or see belov	v

2. Frequency Criteria

A. Was a laboratory control sample prepared at the frequency stated in the method (1/20)? **Yes** or No

If no, estimate positive results (J) for the analyte if LCS was not performed.

If more than 20 samples/batch, qualification begins at the 21st sample.

All criteria were metX
Criteria were not met
and/or see below

X. ICP SERIAL DILUTION ANALYSIS (Section 1)

The assessment of the ICP serial dilution analysis is to determine the precision of the laboratory through a 5x dilution.

1. Percent Difference (%D) Criteria:

	s analys				ed for eac the undiluted					
	Serial	dilutions	were	not	performed	for	the	following	target	analytes:
for ana		dilutions wer			out analytical re dilution.	result	ts did ı	not agree wi	thin 10%	difference
List the	%Ds fo	r analytes w	hich did	not me	eet the %D c	riteria	(10%/	/100%)		
Sample	#_JC	35815-1R			_ Matrix	::S	oil		Units:	_ug/kg

ANALYTE	IDL	50x IDL	SAMPLE RESULTS	SERIAL DILUTION	%D	ACTION
Al						
Sb	0.32	16	4.8	0.0	100	No action
As	1.3	65	19.0	12.7	33.2	No action
Ва						
Be	0.1	5.0	2.20	2.60	18.2	No action
Cd						
Ca						
Cr						
Со						
Cu						
Fe						
Pb						_
Mg	Ī					
Mn						
Hg						
Ni						
K						
Se	3	150	4.70	0.0	100	No action
Ag	0.9	4.9	2.10	8.10	285.7	No action
Na						
TI	0.44	22	3.20	24.7	671.9	No action
V						
Zn						

Note: Serial dilution within method performance criteria; initial concentration < 50 idl.

All criteria were metX
Criteria were not met
and/or see below

ACTIONS: Actions apply to all samples of the same matrix. The qualification will also be applied to the results of all samples within a given area of the site, if deemed appropriate. Qualify only samples with raw results > 50x MDL.

Flag results with an (E) for elements exhibiting %D > 10%. Estimate (J) positive results > 50x MDL for elements that exhibited %D > 10 but < 100.

Reject (R) positive results > 50x MDL for elements which exhibited %D $\geq 100\%$.

SERIAL DILUTION ANALYSIS (Section 2)

2. Frequency Criteria

A. Was a serial dilution analysis prepared as required by the method? Yes or No

If no, estimate positive results ≥ 50x MDL (J) for the analyte which serial dilution analysis was not performed.

B. Was a field blank used for serial dilution analysis?

Yes or No

If yes, estimate positive results \geq 50x MDL (J) for the analyte if field blank was used for serial dilution analysis.

Table 10. Serial Dilution Actions for ICP-MS Analysis

Serial Dilution Result	Action for Samples		
Aqueous: Sample concentration > 50x MDL and 10% < %D < 100%	Qualify affected results whose raw data are > MDL as estimated (J)		
Aqueous: Sample concentration > 50x MDL and %D ≥ 100%	Qualify affected results whose raw data are > MDL as unusable (R)		
Soil/Sediment: Sample concentration > 50x MDL and 15% < %D < 120%	Qualify affected results whose raw data are > MDL as estimated (J)		
Soil/Sediment: Sample concentration > 50x MDL and %D ≥ 120%	Qualify affected results whose raw data are > MDL as unusable (R)		
Interferences present	Use professional judgment		

A separate worksheet page should be used for each serial dilution analysis.

		Criteria were not met and/or see below
XI.	ICP-MS INTERNAL STANDARDS	
	Are internal standard added to the sample?	Yes_or No?
	Are the proper number of internal standard added to the sample	? Yes or No?
	Is the % Relative Intensities for all internal standards in a sample response in the calibration blank?	e is within 60-125% of the Yes or No?
	Note:_ICP-OES_internal_standards_used;_relative_intensities_v _document_performance_criteria	within_the_guidance_

All criteria were met N/A

Action:

NOTE: Apply the action to the affected analytes for each sample that does not meet the internal standard criteria.

- 1. If no internal standards were analyzed with the run, the sample data should be qualified as unusable (R). Record this in the Data Review Narrative and note for CLP Project Officer (CLP PO) action.
- 2. If less than five of the required internal standards were analyzed with the run, or a target analyte(s) is (are) not associated to an internal standard, the sample data, or analyte data not associated to an internal standard should be qualified as unusable (R). Record this in the Data Review Narrative and note for CLP PO action.
- 3. If the % Relative Intensities for all internal standards in a sample is within 60-125% of the response in the calibration blank, the sample data should not be qualified.
- 4. If the %RI for an internal standard in a sample is not within the 60-125% limit, qualify the data for those analytes associated with the internal standard(s) outside the limit as follows:
 - a. If the sample was reanalyzed at a two-fold dilution with internal standard %RI within the limits, report the result of the diluted analysis without qualification. If the %RI of the diluted analysis was not within the 60-125% limit, report the results of the original undiluted analyses and qualify the data for all analytes that are ≥ Method Detection Limit (MDL) in the sample associated with the internal standard as estimated (UJ).
 - b. If the sample was not reanalyzed at a two-fold dilution, the reviewer should use professional judgment to determine the reliability of the data. The reviewer may determine that the results are estimated (J) or unusable (R).

Table 11. Internal Standard Actions for ICP-MS Analysis

Internal Standard Results	Action for Samples
No internal standards	Qualify all results as unusable (R)
< 5 of the required internal standards	Qualify all results as unusable (R)
Target analyte not associated with internal standard	Qualify all analyte results not associated with an internal standard as unusable (R)
% RI < 60% or > 125%, original sample reanalyzed at 2-fold dilution, and % RI of diluted sample analysis is between 60% and 125%	Do not qualify the data
% RI < 60% or > 125%, original sample reanalyzed at 2-fold dilution, and % RI of diluted sample analysis is outside the 60% to 125% limit	Qualify analytes associated with the failed internal standard that are ≥ MDL as estimated (J) and qualify associated non-detects as estimated (UJ)
Original sample not reanalyzed at 2-fold dilution	Use professional judgment Qualify sample results as estimated (J) or unusable ®

XII. DETECTION LIMITS RESULTS

The detection limit assessment is to verify that samples results are within instrument calibration range or linear range (ICP).

Instrument Detection Limits (IDL). Note IDL is not required for Cyanide.

- A. IDL/MDL (or lowest quantitation limit used) results were present and found to be allevels that meet the project objectives? Yes or No
- B. IDL/MDL (or lowest quantitation limit used) were not met for the following elements:
- Reporting Requirements
- A. Were sample results on Form I (or equivalent) reported down to the IDL/MDL or lowest quantitation limit used for all analytes? Yes or No
- B. Were sample weights, volumes, and dilutions taken into account when reporting results (positive and nondetects)? Yes or No

If no, the reported results may be inaccurate. Request the laboratory resubmit the corrected data.

- Sediment Sample Percent Solids (% solids):
- A. Were the % solids for any sediment samples < 50% but ≥ 10%? Yes or No If yes, estimate positive results and nondetects (J/UJ) if the % solids is 10-50%. List the affected samples:_____
- B. Were the % solids for any sediment samples < 10%?

 Yes or No

 If yes, reject all results (R) if the % solid is < 10%. List the affected samples: N/A
- XI. TOTAL/DISSOLVED OR INORGANIC/TOTAL ANALYTES
- A. Were any analyses performed for dissolved as well as total analytes on the same sample(s)? Yes or **No**
- B. Were any analyses performed for inorganic as well as total analytes on the same sample(s)? Yes or **No**

If yes, compare the differences between dissolved (or inorganic) and total analyte concentrations. Compute each difference as a percent of the total analyte only when both of the following conditions are fulfilled:

- (1) The dissolved (or inorganic) concentration is greater than total concentration, and
- (2) greater than or equal to 5xMDL.

						ria were met _ Criteria were nd/or see beld	not met
C.	Is any dissolved than 20%?	d (or inorganic) co		greater tha es or <u>No</u>	n its total	concentration	by more
D.	Is any dissolved than 50%?	d (or inorganic) co		greater tha ⁄es or <u>No</u>	n its total	concentration	by more
	percent differen	ce is greater th ated. If the differen					
XII.	SAMPLE QUAN	ITITATION					
The sar	mple quantitation	evaluation is to v	erify laborate	ory quantita	tion result	is.	
	Sample results arameters.	fall within the line	ar range for	ICP and w	vithin the o	calibration ran	ge for all
dilution	If samples resu performed?	lts were beyond th	ne linear ran	ge/calibrati	on range o	of the instrume	ent, were
List the	affected sample	s/elements/dilution	n:				
In the s	pace below, plea	ase show a minim	um of one sa	ımple calcu	lation per	method:	
ICP/ICF	P-MS	Computer printou	it				
<u>Hq/Met</u>	als by AA	Computer printou	t				
<u>Hexava</u>	llent Chromium						
Cyanide	<u>e</u>						
<u>Others</u>							
		llowing equation noncentrations (mg/		ssary to co	nvert raw	data values re	ported in
Conc. ii	n ug/L x <u>Volume</u> Weig	diluted to, mL xht digested, g	1L x 1 1000 mL	1 <u>000 g</u> x <u>1</u> 1 Kg	<u>mg</u> = co 1000 mg	oncentration in wet weight mg/Kg	
In addit	ion the sample re	esults are convert	ed to dry we	ight by usin	g the perc	cent solid calc	ulations:

Wet weight concentration x 100 = final concentration, dry weight (mg/Kg) % solids

OVERALL ASSESSMENT

Action:

- 1. Use professional judgment to determine if there is any need to qualify data which were not qualified based on the QC criteria previously discussed.
- 2. Write a brief Data Review Narrative to give the user an indication of the analytical limitations of the data. Note any discrepancies between the data and the Sample Delivery Group (SDG) Narrative for Contract Laboratory Program Project Officer (CLP PO) action. If sufficient information on the intended use and required quality of the data is available, the reviewer should include an assessment of the data usability within the given context.
- 3. If any discrepancies are found, the laboratory may be contacted by the Region's designated representative to obtain additional information for resolution. If a discrepancy remains unresolved, the reviewer may determine that qualification of the data is warranted.

Note:		
	5,0,000	20